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ELECTRICITY ON THE FARM *Magazine*

MAY 1958

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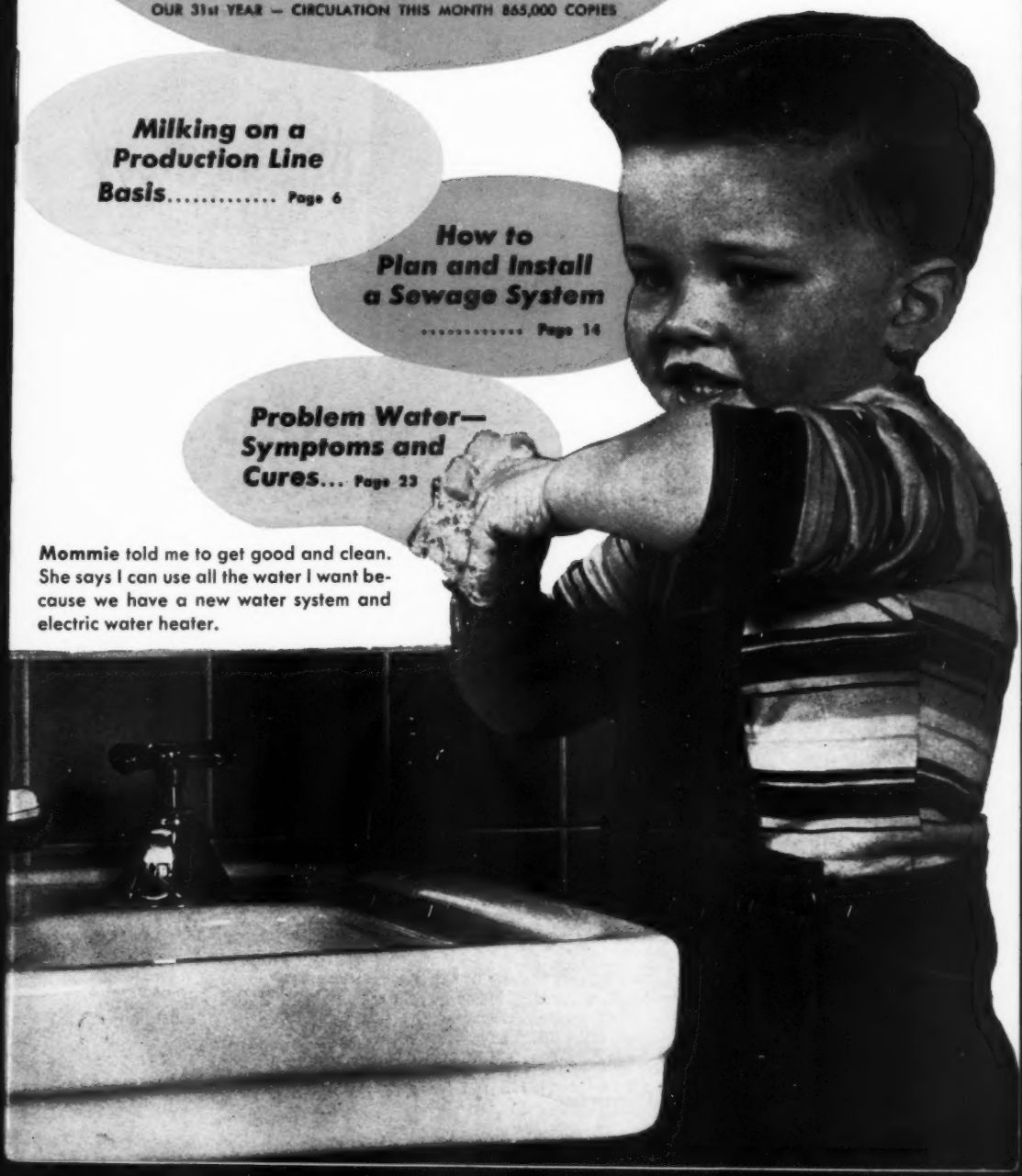
Problem Water— Symptoms and Cures ... Page 23



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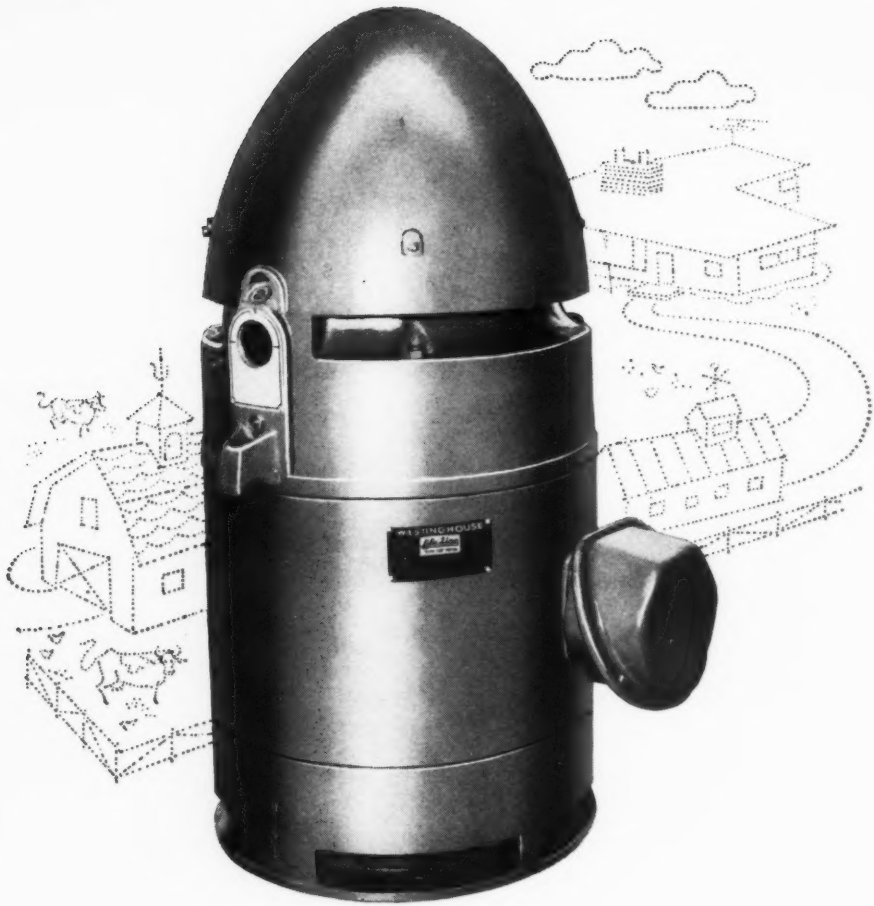

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Published in the Interest of Your Electric Cooperative

Lancaster, Ohio, May 1958

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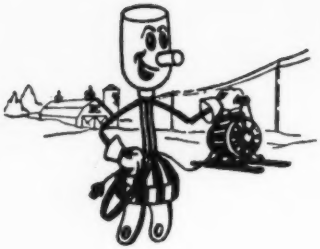

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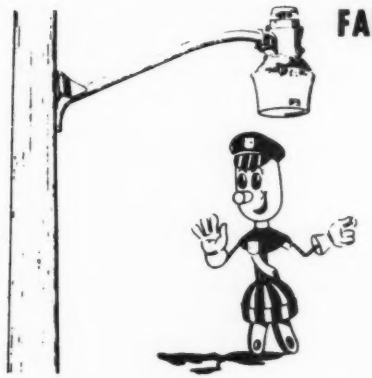

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Editor's Chat

A DRY SUBJECT

This may be a "dry subject" but it is one that will interest a good many farmers right now or pretty soon. It is the problem of getting hay or grain dry enough for safe storage without having to wait on the weather. Some day we may be able to "Seed Clouds" or starve them and regulate the weather. This of course, will lead to more arguments and discord than any other one thing we can think of.

However, like blowing on your soup to cool it, there is a very practical way to circumvent bad weather—irrigate when you want water and use a crop drying outfit to get rid of any surplus on hand at the wrong time.

Crop driers in many styles and sizes are available now to fit almost any condition or crop. And it may pay you to get set up to regulate the weather to suit yourself. That would provide a certain amount of fun and satisfaction and probably a good profit, too.

BETTER SAFE THAN SORRY

That mark is so old and so often repeated that all too many of us pay no attention to it. That along with a lot of other reasons is why we do have many accidents and so many fires. Anyone who has had an accident or fire becomes acutely aware of how expensive it can be, both in money and in suffering or loss. No one can afford to get hurt or to have a fire. Yes—NO ONE.

There are some ways to cut down on accidents and fires without much labor or expense, and we would like to take the liberty of mentioning a few that have to do with electricity.

Check over and repair if necessary any and all grounds on all your electric lines and appliances. And don't forget lightning rods either. A good ground is the number one safety device. Check circuits and fuses to make sure the line is equal to the load put onto it and the fuse small enough to blow if and when the line is overloaded and it is called upon to act.

Keep all motors and appliances clean, oiled and in good repair and adjustment. Also keep the place cleaned up and tidy so there is no trash to catch fire. If you do you will surely escape some accidents and fires that might otherwise come your way.

AN IMPRESSIVE THOUGHT

Recently, an agricultural leader from India was visiting this country to learn about our agriculture and to compare American farm life with that in his own country. While visiting Purdue University, Professor Johnson of the Agricultural Engineering Department asked him to name the one thing about farm living in America that impressed him the most. With very little hesitation he answered, "I was born and raised on a farm in a mountainous part of India. We had to get all the water for our household use from a well that was nearly a mile away. And we didn't have an automobile or a truck to haul it. It was carried by hand. To me those pipes coming out of the wall that will deliver water just by turning a faucet are the one single most impressive thing about your farm living."

JUST A POSTSCRIPT—*There is still a big percentage of our U. S. farmers carrying their water!*

Jim Ridout

Subscription rates: $1.25 per year; $2.00 for 2 years; $3.00 for 4 years. 15¢ per copy. Bulk rates on request. Accepted as controlled circulation publication at Dayton, Ohio.

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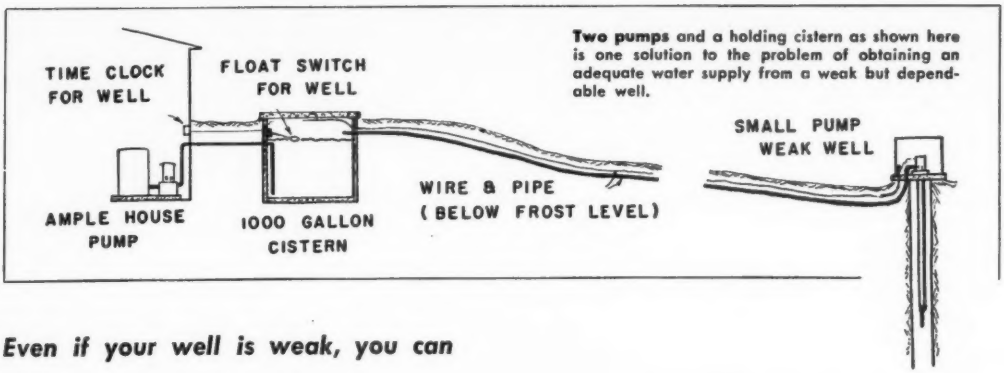
TIME CLOCK FOR WELL
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AMPLE HOUSE PUMP
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WIRE & PIPE (BELOW FROST LEVEL)
SMALL PUMP WEAK WELL

Two pumps and a holding cistern as shown here is one solution to the problem of obtaining an adequate water supply from a weak but dependable well.

Even if your well is weak, you can

Design for Adequate Water

Providing capacity for peak demand periods is the secret

A summary of studies conducted for one year by Oklahoma State University indicates that rural families have the same water use habits as city dwellers when their pump is large enough and the water supply is adequate.

Ten families were carefully chosen for this study. Each home had growing children. Each was equipped with automatic clothes washer and a bathroom. The water usage habits of these families were compared to similar families who used city water.

Plastic pipe and the underground electric wiring can be plowed under together. The pipe should be buried deep enough to avoid freezing.

By ELMER R. DANIEL*

Water usage for the rural families ranged from 157 gallons per day per person to as little as 23 gallons per day per person. The average was 61.3 gallons per day per person. The water usage of the city families ranged from 108 gallons per day per person to 39 gallons per day per person with an average of 56.2 gallons per day per person.

Further examination of the low water users on the farm family list indicated that the pump was too small, the well was weak, or the pipe from the well to the house was too small.

The accompanying illustration indicates one solution for a weak but dependable well. A small pump without tank is located in a 30″ x 30″ house 24″ high at the well. The electric wires from house to pump are buried with the plastic pipe.

The wires first pass through a time clock at the house which allows the pump to run 5 or 10 minutes every hour. When the cistern at the house fills the electric float switch located in the cistern prevents the pump from running. A special underground wire called UF (underground feeder) or USE (underground service entrance) is recommended. The use of a 230 volt circuit is also recommended so as to reduce the size of wire required for the long runs.

On one such installation, 1400 feet from the house and some 60 feet lower in elevation, a ¾″ plastic pipe was used. The pump is set to operate at 40 pounds pressure in order to overcome the 32 pounds of water pressure lost in the pipe in lifting the water 60 feet and from friction losses in the 1400 feet of pipe. No. 8 wire was used to provide a voltage drop to pump of not less than 3%.

Design for Adequate Pressure

The house pump in the basement will furnish some 1200 gallons per hour when needed. This will give full flow to 6 open faucets at one time. In the piping system at the house, the pressure drop from pump to any faucet, when system is operating at peak load, should not exceed 5 pounds drop.

A system designed according to these recommendations is a pleasure to use and offers good protection in case of fire. □ □

*Mr. Daniel is Assoc. Professor of Agricultural Engineering, Oklahoma State University.

Water Plays Important Roles in Hog Fattening Operation

It cleans floors, it satisfies thirst, it cools animals

By JOHN R. DOLINGER

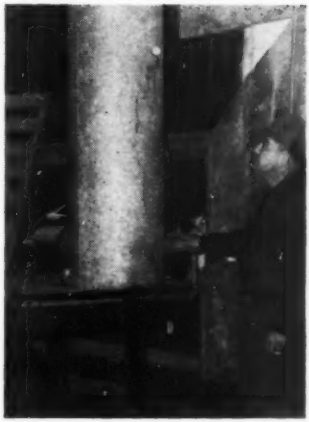
Robert Baker of Clarksville, Tennessee, is operating a "pig parlor" which is in every sense a "hog heaven" for the hogs and a profiitable venture for him.

In December of 1956 Baker decided to build a pig parlor. He started with a building 20 feet x 40 feet, roofed with aluminum roofing supported on pole frame construction, and with sloping concrete floor. Along the low side of the floor a gutter was formed in the concrete which drained to the outside. This enables Baker to wash the floor down with a hose and thereby simplify the chore of cleaning.

Baker had been feeding hogs on pasture but he found the pig parlor operation so satisfactory that he promptly increased the size from 20 feet x 40 feet to 40 feet x 80 feet. Profit from feeding out hogs in the parlor from its beginning in December of 1956 until the following April paid for the two sections he had built says Baker. He has since added another section to the building to bring its present size to 50 feet x 80 feet and 300 hogs total.

Contributing greatly to the success of the pig parlor is an electric water pump installed on a platform inside the building to provide a plentiful supply of water for drinking, cooling and cleaning. The water is pumped from a large pond Baker built near the pig parlor.

For drinking, automatic drinking cups are provided around the sides of the pig parlor. When a hog wishes to drink his nose depresses a paddle in the cup which opens a valve and allows water to flow in.



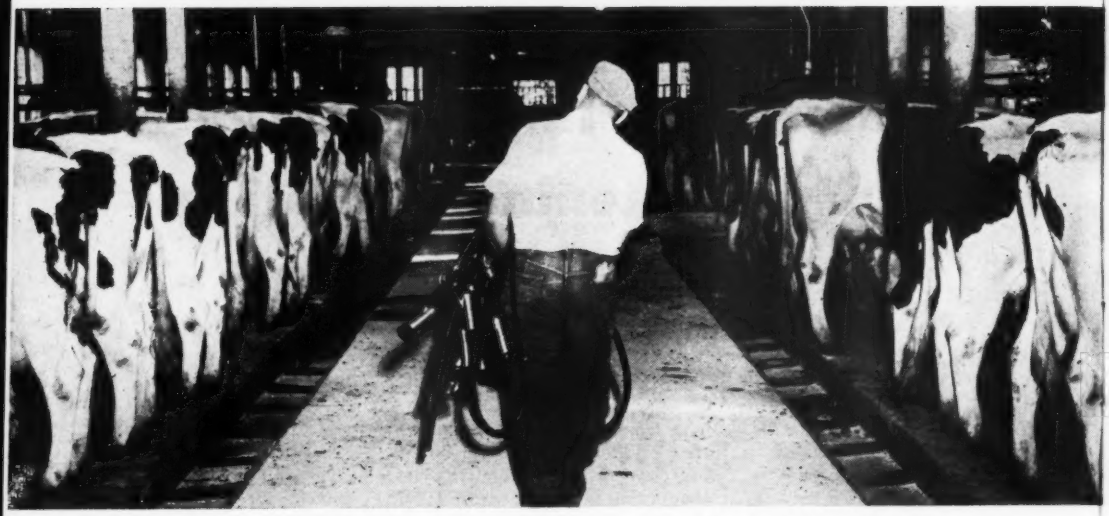
Water pump provides adequate supply of water for "pig parlor" operations.

For cooling two rows of fog nozzles are provided through the parlor about 5 feet off the floor. In hot weather these nozzles provide a continuous spray of water which keeps the hogs cool.

Every other day the floor of the building is hosed down and therefore it is kept clean. Due to good sanitation practices, Baker has had no trouble with diseases.

During 1957 Baker finished out 800 hogs in the pig parlor and having fed hogs both in the open and in the pig parlor he says he realizes at least $4.00 more profit per hog with parlor feeding than with pasture feeding. He says the parlor method would not be successful without plenty of water under pressure, so electricity goes to the pig parlor to provide comfort for the hogs and profits for Baker. □ □

Overhead sprinklers are used to spray fog mist on hogs for cooling purposes.



Cows are ready for milking as Harold Borenfleth carries four milker units to far end of barn. Glass pipeline, 325 feet in length, runs around barn perimeter to carry milk to bulk cooler.

Milking on a Production Line Basis

Good planning and coordination coupled with modern equipment makes it possible

By RALPH BOWEN

Putting 70 cows into a stall barn, milking them and letting them out of the barn—all in 1 hour and 30 minutes—is routine procedure on the Borenfleth Bros. Farm near Mukwonago, Wisconsin. And the whole operation is done by only two men, Donald Wieselman and Harold Borenfleth, who operate the farm.

The secret to this efficient, smooth operation is their well organized daily chore practice. They milk cows in a regular production line manner that is a pleasure to observe. Of course, as with any factory, modern equipment does the hard work. They don't waste their own body energies doing menial or laborious chore tasks.

The milking operation started at 5:30 when the 70 cows were brought into the barn. The animals were all in place by 5:45.

Then both men went to the milkhouse and returned, each carrying four milker units. These were brought to the far end of the barn.

Pipeline Milking System Used

The number one man started on the left row of cows, washing every other cow until he reached the eighth animal. He then started back on the other side, washing every other animal. The second man followed behind putting the milkers on every other animal in each row.

When the second man completed putting the milker on the eighth cow, the first cow was milked dry. The milkers were then shifted to the next cow in each row. By this staggering method, two cows could be milked by each milker before the hose needed to be removed from the pipeline.

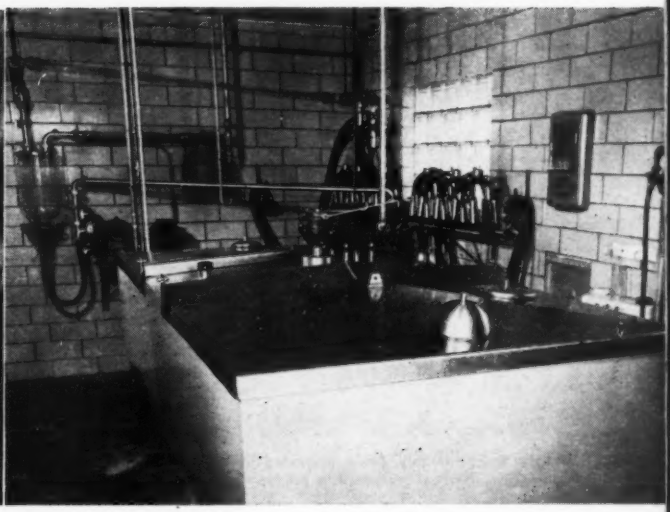
The two men took care to observe several details of operation in order to make this procedure function smoothly:

- No time was wasted engaging or disengaging the suction hose from the pipeline so as not to reduce the vacuum and drop all the other milkers to the floor.

- Milkers were put on the cows quickly so as not to reduce the line vacuum excessively.

- The machine stripping operation was checked so that as each quarter was milked dry, the milker was removed. When the last quarter was milked dry the milker was immediately moved to the next cow.

Milker unit is carefully placed on one of the cows by Donald Wieselman.



Milk is safely cooled and stored in this bulk milk tank located in milkhouse. The automatic pipeline washing equipment is on the wall in rear.

After the eight milkers were attached as outlined above, each man took charge of one row of cows with four milker units. When each pair of cows in the row was milked, the milker was carried ahead eight spaces.

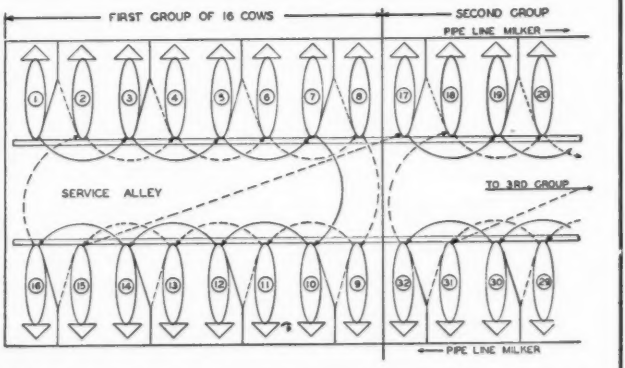
The entire milking operation was completed by 7:00. A check showed that 1192 pounds of milk had been carried by the pipeline into the bulk cooling tank. And not a pound of it was lifted by either man!

Equipment Cleaning Automatic

As soon as the last cows were milked and released from the barn, the men took the milker units back to the milkhouse, four at a time. One man took over the washing operation while the other checked the calves and did some other miscellaneous chores.

The washing operation was pretty much automatic. The milkers were immediately placed on the mechanical washer at the washing stand. The warm water rinse was also started through the 325 feet of glass pipeline and as soon as the last of the milk was forced out of the line, it was shifted from the bulk tank to the wash tank so as to discharge wash water into it.

Detergent was added to hot water and this was circulated through the system for 15 to 20 minutes. Then the suction hoses which took the water from the detergent tank were moved to another tank of clear, hot rinse water. This fresh rinse water was also circulated through the pipeline for a short period of time. The system is later sanitized with a cold water solution just before using.



Motion diagram shows path of operation for worker during milking. The first man starts washing cow #1, then moves on to 3, 5, 7, 10, 12, 14, and 16 as shown by solid line. On second trip around he follows dotted line washing cows #2, 4, etc. The second man attaches milkers on cow #1, 3, etc. following directly behind the washer. Note that second cow can be milked by each milker before hoses are shifted.

Efficiency Is Keynote

The Borenfleth Bros. Farm has one objective—to build up their dairy operation to the point where they will receive base pay for as great a percentage of their milk as possible. We think they are certainly off on the right track. Their production line operation attests to the fact that they have licked one big problem—their choring is efficient, fast, and is done with a minimum of labor. □ □

Typical safe water supply being inspected by county health officer. Pit is located in well-drained area away from sources of contamination. Poured concrete top prevents entrance of surface water.

How to Make Your Water Supply Safe

Well type, location, construction, and protection must all be taken into consideration

By A. V. KREWATCH*

Water, a national problem in many ways, is especially important to farm families. It is essential that they take steps to assure themselves that their water supplies for farm use are safe, adequate and of good sanitary quality. Water plays a very important part in all domestic and farm operations. The production of safe, high-quality milk, for instance, is important to millions of consumers as well as to the producers. Therefore, farmers must be certain that the water they use is safe.

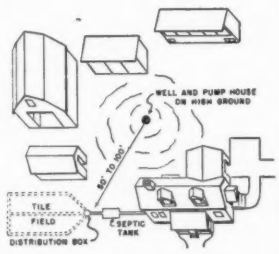
Protecting the Water Supply

The health of many farm families is endangered by polluted water from unprotected sources. The fact that the water tastes good and looks clean is no proof that it is pure and safe to drink. It may be contaminated with disease-producing germs. Here are a few suggestions for safeguarding wells and springs that are in accordance with health authority recommendations.

Contamination of the water supply is generally caused by polluted water entering the well through surface openings or underground channels. Surface water always can be considered contaminated. Any underground water within 10 ft. of the earth's surface can likewise be regarded as unsafe. Sometimes water found at depths of more than 10 ft. is impure because of underground contamination from old wells or other sources. The only way to be sure the water is safe is to see that the source of supply is:

Properly located
Physically protected
Periodically tested for purity

If you are in doubt about any of these contact your local or county health department.



Locate well at a sanitary site, on high ground if possible, and at a safe distance from any possible sources of contamination.

Location

Whenever possible, the water supply should be placed upgrade and at a safe distance from the barnyard, septic tank, outhouse and other possible sources of contamination.

Recommended minimum distances between well and source of contamination as suggested by official state agencies are as follows: vault type pit privies, septic tanks, and sewer lines—50 feet; seepage pits, sewage disposal fields, barnyards, and barn drainage pits or ditches—100 feet; and cesspools—150 feet.

*Mr. Krewatch is Extension Agricultural Engineer, University of Maryland.

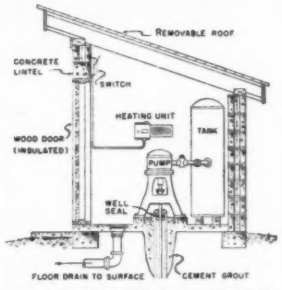
Constructing New Wells

Generally, wells are either drilled, driven, dug or bored. Basically, the protection for all types of wells is the same; namely, a casing or well lining deep enough to exclude underground seepage of contaminated water and a watertight platform or cover to prevent surface water from running into the well. When it is desired to install the pumping equipment in a specific location, such as the house basement, more efficient operation will usually result if the well is located nearby. Yet, protection of the water supply must be provided.

Drilled Wells

Drilled wells properly constructed are cased with wrought-iron or steel pipe extending to solid rock or into compact soil. The space between the casing and earth should always be grouted with concrete because the hole for a drilled well is always larger than the casing. Unless a watertight seal is made, contaminated water can run into the well.

A concrete platform at the top of the well gives further protection and provides a substantial base for the pumping equipment. The casing should extend at least 6 to 12 inches above the floor level and be sealed with a sanitary seal. Provide an elevated concrete base for the pump.



Above-ground pump house installations are often the most practical type of protection for pumping equipment. Thermostatically controlled pump house heater prevents freezing.

Driven, Bored, or Dug Wells

When wells are driven, the ground is usually tight around the pipe and no grouting is needed except around the top where vibration from driving enlarges the hole.

Where a hole is drilled or bored down a few feet to facilitate driving, a steel or wrought iron casing is placed in the hole and the space around the casing is then filled with cement-sand grout and the casing sealed with a watertight sanitary seal.

A concrete platform similar to the one used for drilled wells results in quick runoff of surface water and holds the pipe securely in place.

Large-diameter bored or dug wells can be protected by a 6 inch thick cast-in-place concrete

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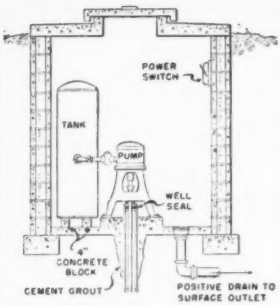


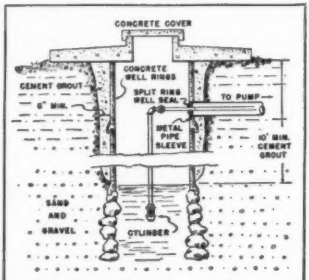
Pump pit installations should provide an elevated concrete base for pump and pressure tank, a gravity drain, and an all-weather cover.

casing made by using an inner lining of concrete pipe. The pipe should extend several inches above the ground and to a depth great enough to exclude any water that might be unsafe. The complete casing should never be made less than 10 ft. deep. A concrete platform at ground level over the casing completes the protection.

Many old large-diameter wells are dangerous because polluted water seeps or drains into them. Many are lined with loose brick or stone which offers little protection against seepage. These old wells can be protected and made serviceable by a concrete casing and watertight concrete platform the same as for new bored or dug wells.

Pump Houses and Pump Pits

A pump house or off-the-basement pump pit provides excellent protection for the pumping equipment of a modern water system and adds to its serviceability. Pump houses are usually more sanitary than pump pits. A concrete masonry pump house provides durable watertight protection for pumping equipment. The roof can be taken off to permit removal of the well pipe.



Concrete grout to a minimum depth of 10 feet and provide surface protection when constructing new wells or repairing old systems.

Electric pump house heaters, thermostatically controlled, can be used to maintain the temperature above freezing in extremely cold weather.

Some types of deep well installations can be made free from frost danger by placing the pressure tank in the basement and connecting it to the well below the frostline.

Off-the-basement pump pits are sometimes used to protect pumping equipment from freezing. Such a pit correctly designed and with floor sloping to basement drain protects the well from contamination, provides a firm anchorage for the pumping equipment and keeps the equipment dry.

It is always important that any type of pump room have adequate drainage and ventilation. The room should have openings for ventilation provided under the hatch cover. Because of the possibility of flooding, it is generally not advisable to install pumping equipment below grade level unless the floor of the pit drains to a good surface outlet. Even then some authorities frown on pump pits.

Cross-Connections and Back Siphonage

A cross-connection is a piping arrangement whereby water from more than one source may be forced through the same distribution or plumbing system. A safe water supply system should never be cross-connected with an unsafe one. This may introduce contamination into the safe supply. Auxiliary water supplies are hazardous from a public health standpoint. If it is necessary to have an unsafe water supply for fire protection, irrigation, or similar purposes, use a separate pumping and distribution system with no connections to the safe supply.

Your county agent, county health department representative or power supplier farm service representative can give you valuable assistance in planning your farm water supply and sewage disposal improvements. You are urged to contact them for help and guidance in the planning stages of any work you do along these lines. □ □

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ONLY one moving part—no floats, levers, or springs to jam because of rust or corrosion. Provides clean, fresh water in summer; warms water in winter for 2c a day because thermostatically controlled electric heating element heats a mere bowlful instead of a tankful. Stainless steel and aluminum alloy construction. Completely automatic. Safe!

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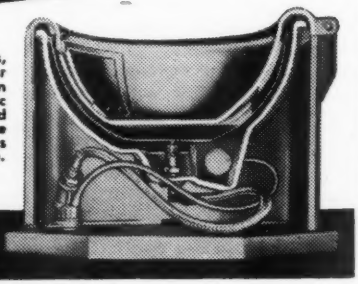

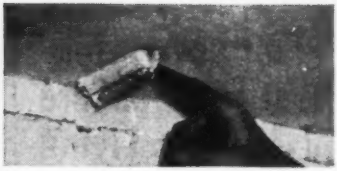

▲ **Detector** device which set off alarm when fire started.

◀ **Four people** who were awakened by fire alarm system are Mr. and Mrs. William McCorkle and sons Don and Harold. The McCorkles are installing another alarm system in their new home.

Fire Alarm Saves Four Lives

By LEE WETHERBY

The lives of four members of the William McCorkle family of Concord, Michigan were saved from destruction in a disastrous fire. The ringing of the electric alarm bell which had been installed for just such an emergency, aroused Mr. and Mrs. McCorkle and their two sons from a sound sleep in the early morning hours and they were able to escape their flaming home.

The cause of the fire is unknown. It started in a shed attached to the back of the house and had gained considerable momentum by the time the alarm sounded. The McCorkles credit the alarm system with warning them in time for their escape. A few more minutes without the alarm probably would have resulted in one or more of them being trapped in the burning building.

The master control was located at the house. This contains the heart of the system from which the power is obtained to ring the bells in case any one of the activating units indicates fire. The master control normally receives its power from the 115 volt house service. In event of power failure it switches over to a standby battery.

The detectors are simply a link of soft metal which melts at 160° F. and breaks the alarm circuit. The breaking of the circuit at any one of the many detector stations starts the alarm ringing. McCorkles used 3 bells.

The McCorkles wondered at various times after they had their alarm installed if they had spent their money wisely. Now they know. □ □

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"Everything" say thousands of Patz Barn Cleaner Users.

"It's a *specially-designed* patented Barn Cleaner Link without pins to rust, bend, bind or stretch. It's a deep forged and hammer-formed link with steel *and* strength *concentrated* in rounded, full bearing one-piece 'eye' and 'hook'." *Rounded* Corners* throughout provide complete *flexibility* for 90 degree *right* or *left* hand turns or 45 degree *elevations* . . . *without jamming or binding.* No other Barn Cleaner Chain *possesses equal strength and flexibility!*

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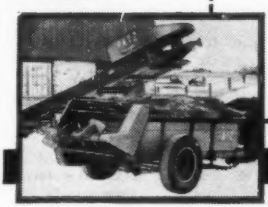

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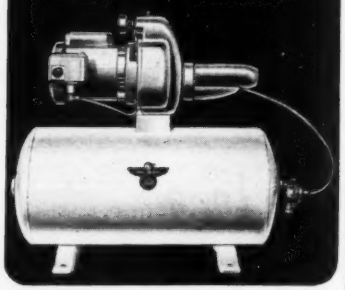

With a Red Jacket Jet Pump on your farm you can be sure of plenty of water and pressure at every faucet and hydrant. And in the home, where so many families are installing such wife-saving appliances as automatic washers and dishwashers in addition to regular home water needs, there is plenty of water and plenty of pressure to keep all plumbing working right.

There's a model to meet your needs —a shallow well, a convertible single-stage for shallow well or deep well installations, and for greater depths and capacities, a multi-stage line. In all, 32 models ranging from 1/3 to 1-1/2 horsepower. Capacities to 1350 gallons per hour, depths to 160 feet, pressures to 100 pounds. All so quiet and dependable you will never hear them in your basement.

For complete information contact your local pump dealer.

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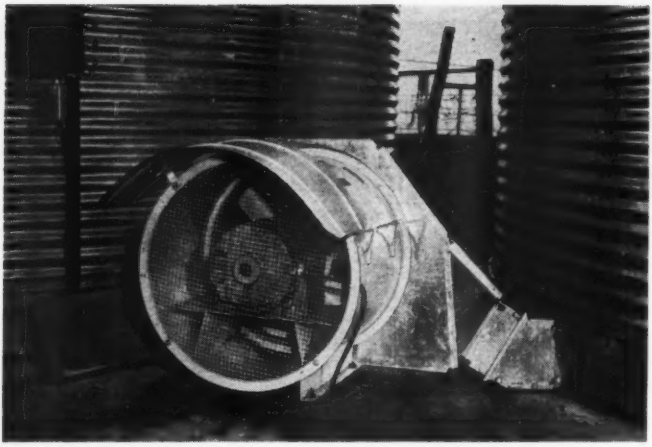

Research shows that on-the-farm grain drying can provide such benefits as more days available for harvesting, earlier harvesting, less field loss of grain, higher test weights, and ability to hold grain for most favorable market price.

When Should You Combine Your Wheat?

High-moisture-content harvesting is the answer

By WILLIAM H. JOHNSON*

Up until a few years ago the answer to this question was quite clear cut—at or below 14% grain moisture. This recommendation was based on the market price structure and storability of the grain.

Has this situation changed? The answer is *yes*. Here are the factors you will want to consider.

Timely harvest in general contributes to a lower loss and a higher test weight grain. Under Ohio conditions several things occur in soft red winter wheat after it has ripened to 25%:

Test weight decreases about a quarter pound each day.

The grain which the combine can harvest is about 12 pounds per acre less each day due to increasing cutterbar loss, natural shatter, and wildlife damage.

It was found, however, that grain should not be threshed above 20% because of kernel damage. The damaged kernels seriously reduce test weight, germination, and may impair storability of the grain.

Combines work well below 20% grain moisture. The amount of unthreshed grain in the head increases as the moisture content increases. However, an increase in cylinder speed or a closer cylinder-concave clearance will correct this. The combine's separation mechanism functions slightly more efficiently in the moisture range of 15 to 20%. There should be slightly less threshing plus separating loss in the 14 to 20% moisture range when the combine is properly adjusted.

Timing of Harvest Important

Harvesting below 20% instead of below 14% contributes to time-

*Mr. Johnson is Assistant Professor of Agricultural Engineering at Ohio State University.

ly harvest. From the rate of drying as the grain ripens, it appears that there would be normally four days from the time the grain is at 20 until it has reached 14%. Also the number of "combinable" days about doubles as the allowable combining moisture limit increases from 14 to 20%.

The most significant dollar benefit of timely harvest is the additional pounds of grain harvested. Higher test weights are also preserved although this is of lesser importance. It appears that in an average year the harvest can be completed five days earlier which would mean about $2.50 per acre higher return. Barring a complete harvest failure the range of the higher return is $1.00 to $10.00 per acre depending on the quality of the harvest season.

Drying Provides Many Benefits

Whether high moisture harvest is possible for you depends on whether drying facilities are available at a justifiable cost. Drying is possible on the farm with common crop drying facilities.

Forced air drying is recommended for on the farm drying. Higher test weights resulted when the grain was dried with forced natural air rather than heated air; however, heated air did not affect milling and baking characteristics. Recommended airflows are as follows: 20% grain, 5 cfm per bushel; 18%, 3 cfm per bushel; and 16%, 2 cfm per bushel. It is further recommended for farm drying and especially for farm storage that a "grain protectant" be mixed with the grain to prevent insect infestation.

There are other benefits realized from drying. Not all wheat is sold without moisture discount. In Ohio, for a recent 12 year period, 15% of the wheat reaching terminal markets was graded tough which means it was between 14 and 15½% moisture. This roughly would be equivalent to discounting all wheat about 1½¢ per bushel.

Consideration should also be given to the fact that the market price during the harvest season is lowest. For a recent 10 year period the market price was highest on January 15. At that time the price was 26¢ higher than on July 15.

Market Timing Justifies Drier

One farmer with whom we have worked justified farm drying solely on the basis of being able to safely hold his grain until after flooded market conditions. In doing so he avoided delays in the actual marketing procedure and was able to pick his market. He sold grain in 1957 at 10¢ above market price and 35¢ per bushel above the average discounted price received by five neighbors. His increased return on 1600 bushels of wheat was $450 after shrinkage and drying costs were deducted.

Drying costs are difficult to estimate. However, wheat in the moisture range of 15 to 17% should be dried for 3 to 5¢ per bushel neglecting shrinkage. □ □

Tips on materials handling for the farm—
(ONE OF A SERIES)

Store bales the easy way with an elevator driven by a Century Electric Motor

A good way to save time and backache in storing heavy bales is with an elevator like this driven by a Century Electric motor. Just back your truck up to the elevator, unload, and away they go with a minimum of time and fuss.

When it comes time to use the feed, the same time-saving operation can be used in reverse. Automatic materials handling steps help you increase output, shorten your working day and save operating costs.

Century Electric motors are built for all kinds of farm use. So the next time you need an electric motor ask for Century Electric. You get *more* than a motor from Century Electric.

If your local electrical shop dealer doesn't have Century Electric motors, show him this ad and ask him to write us. Century Electric Company, 18th and Pine St., St. Louis 3, Missouri.

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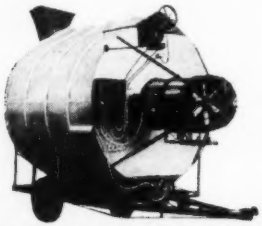

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Please send me details on your new American Automatic Grain Dryer.

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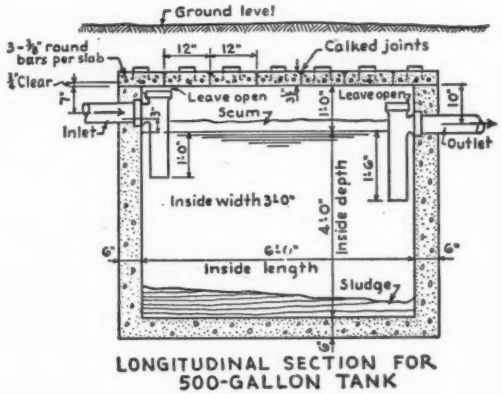
How to Plan and Install a Sewage Disposal System

By JOHN H. KOESTER

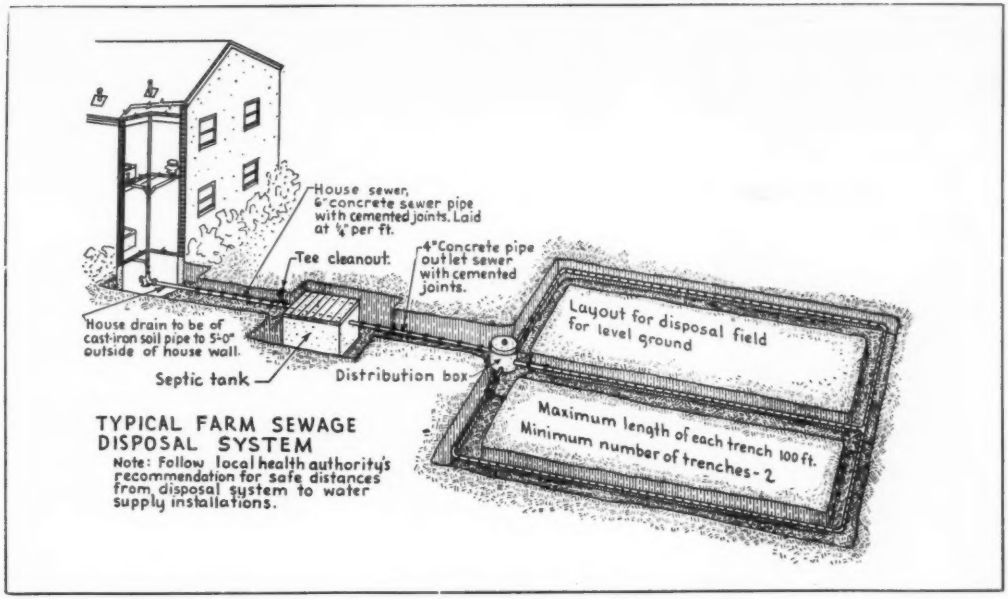
Ask the farm family who enjoys a complete water supply system what they would miss most without running water—and it's a good bet their answer would be the convenience of the modern bathroom. During times of foul weather and sickness it is appreciated even more. And the menfolk would loudly join in agreement on those days when they come in dusty and dirty from field chores.

The modern bathroom becomes a reality for farm families through the installation of a septic tank sewage disposal system. Such a system if properly installed provides a safe, convenient, and economical method of disposing of household wastes. The septic tank system consists of a house drain and sewer, septic tank, outlet sewer, distribution box, and disposal field.

Where does the term "septic" come from? The bacterial activity in decomposing the wastes is called "septic action"; hence the term septic tank. When raw sewage enters the tank, it is broken down into gases, solids and liquids. Gases are passed off into the air through the house vent or stack, solids settle to the tank bottom and the liquids must be drained off into a disposal field. Common belief is that these liquids are rendered safe in the tank. This is not true, however, because infectious bacteria are still present. Final treatment of the effluent must take place in the disposal field. The liquid sew-



LONGITUDINAL SECTION FOR 500-GALLON TANK


House sewer, 6" concrete sewer pipe with cemented joints. Laid at ¼" per ft.
Tee cleanout
4" Concrete pipe outlet sewer with cemented joints.
House drain to be of cast-iron soil pipe to 5'-0" outside of house wall.
Septic tank
Distribution box
Layout for disposal field for level ground
Maximum length of each trench 100 ft.
Minimum number of trenches - 2

TYPICAL FARM SEWAGE DISPOSAL SYSTEM

Note: Follow local health authority's recommendation for safe distances from disposal system to water supply installations.

age, sometimes called effluent, flows through the disposal field tile lines where it seeps out through open joints. Further bacterial action, filtration, and proper environment destroy the disease producing element, resulting in the eventual purification of the effluent.

Now let's take into consideration some of the factors that will influence the design of the septic tank system:

Septic Tank

The tank size is generally based upon the number of bedrooms served. A 500-gal. tank is the minimum size approved by most health authorities. If a garbage disposal unit is used the tank size should be increased by 50 per cent. The following guide may be used:

Bedrooms	*Without Garbage Disposal*	*With Garbage Disposal*
1-2	500 gallons	750 gallons
3	600 gallons	900 gallons
4	750 gallons	1,125 gallons

Ready-made concrete septic tanks, available in most rural communities, are often the most economical and convenient means of providing the tank. Installation of these tanks requires only delivery to the site, lowering from truck into hole, and connection to inlet and outlet lines.

(More on page 16)

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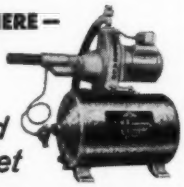
ANYWHERE — ANYTIME

with McDonald Adapto-Jet



You get the exact pump you need to deliver dependable pressure when you need it. Over 55 Adapto-Jet combinations to choose from.

You get that same pressure years from now, even if the water level drops in your well. The Adapto-Jet converts to deep well operation with no additional parts to buy.

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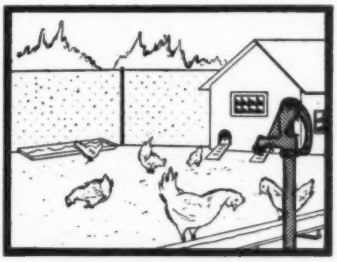

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Move up to ¼ mile of lateral as a unit, for extra speed and labor-saving.

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CITY.....STATE..... W 78-5-58

Required Septic Tank Capacities*

No. of bedrooms in dwellings	Maximum number persons served	Nominal liquid cap. in gallons	Recommended dimensions			
			Inside width	Inside length	Liquid depth	Total depth
2 or less	4	500	3 ft. 0 in.	6 ft. 0 in.	4 ft. 0 in.	5 ft. 0 in.
3	6	600	3 ft. 0 in.	7 ft. 0 in.	4 ft. 0 in.	5 ft. 0 in.
4	8	750	3 ft. 6 in.	7 ft. 6 in.	4 ft. 0 in.	5 ft. 0 in.
5	10	900	3 ft. 6 in.	8 ft. 6 in.	4 ft. 6 in.	5 ft. 6 in.
6	12	1,100	4 ft. 0 in.	8 ft. 6 in.	4 ft. 6 in.	5 ft. 6 in.
7	14	1,300	4 ft. 0 in.	10 ft. 0 in.	4 ft. 6 in.	5 ft. 6 in.
8	16	1,500	4 ft. 6 in.	10 ft. 0 in.	4 ft. 6 in.	5 ft. 6 in.

*From *Individual Sewage Disposal Systems*, Recommendations of Federal Agencies Joint Committee on Rural Sanitation.

Sewage Disposal

(Here from page 15)

Distribution and Disposal Field

The tight outlet line running from the septic tank should discharge into a distribution box. This box, carefully levelled, distributes the effluent equally into the disposal lines. Pre-cast boxes are available or a pipe section may be used.

The disposal field consists of two or more lines of 4-inch drain tile. This tile is laid with open joints in a gravel bed which allows the sewage liquids to seep out into the surrounding soil area. The amount of disposal line needed depends upon the absorptive ability of the soil. Some suggestions on disposal fields made by health authorities are as follows:

Minimum of 150 feet of open joint tile in a trench 18 inches wide, 6 inches of gravel under the pipe and 2 inches gravel cover over the pipe.

Where garbage disposals are in use, the minimum length of the field should be increased to 180 feet; where automatic washers are in use, the length of field should be at least 200 feet; and with both in use, a minimum of 250 feet.

The trench should be as shallow as practicable in the range of 18-36 inches.

There should be at least two lines per field. A greater number of short lines are more efficient than fewer long lines.

In the final analysis, it's a good idea to make at least two percolation tests at different locations in the disposal field to determine the permeability of the soil. These tests will determine if additional disposal line is needed.

Summary

If properly installed a septic tank system is a practical and relatively safe means of disposing of household wastes. At the same time it provides a convenience which adds to the enjoyment of modern living.

Here, only a few general installation suggestions have been given. Most extension departments of land grant colleges have complete bulletins available with further details pertaining to farm sewage disposal problems. The Portland Cement Association, 33 West Grand Avenue, Chicago 10, Illinois, also has a very helpful book on the subject entitled "Concrete Structures for Farm Water Supply and Sewage Disposal" which is available for the asking. We urge that you contact the above people or your local county agent, health authority, or the farm service department of your power supplier for the more detailed information you may need regarding plans for your sewage disposal system. □ □

RESEARCH NOTES

By J. P. SCHAENZER

Milk production records, kept by the Missouri Dairy Herd Improvement Association, show that for the low 10% of the herds producing an average of 6,425 pounds of milk yearly it took 57 cows to yield $3,000 labor return. The 5 highest herds needed only 10 cows producing 11,827 pounds average for the same income.

African Violets produced with fluorescent tubes were sturdier and greener than with any other lighting system, according to recent experiments by W. E. Larmie, University of Rhode Island. Place the tube one foot above the plants and in the evening turn on the light until bedtime.

Egg quality tests, conducted by USDA and State Experiment Station researchers, reveal that prompt continuous refrigeration is essential if eggs are to retain top raw albumen and flavor quality. At room temperature they were below A quality in flavor in one week and in albumen in two weeks.

Tower silo waste can be eliminated according to three years of testing at Rutgers University. A plastic sleeve serving as a cover does the trick.

Dead poultry can be sanitarily disposed of in an insulated and electrically heated septic tank developed by agricultural engineers and a poultry specialist of the University of Connecticut.

A greenhouse compressed air hand duster operating at 50 to 75 pounds pressure was designed by agricultural engineer, Norman Akesson, University of California. It is in production and is also usable for building pest control and animal dusting.

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a pump you can't see or hear
can't freeze • never needs oil
gives more water, more pressure

At last, a pump that gives you all the water you need, every place you need it—with much greater pressure. It's the Rapidayton Dolphin submersible. Goes into the well (to 500 feet), where it operates completely submersed. Easy to install. Fully automatic. Low cost—compares with deluxe jet system. Gives more water for your dollar. See it at your dealer's and write today for booklet, "What Kind of Water Pump Do You Need?"

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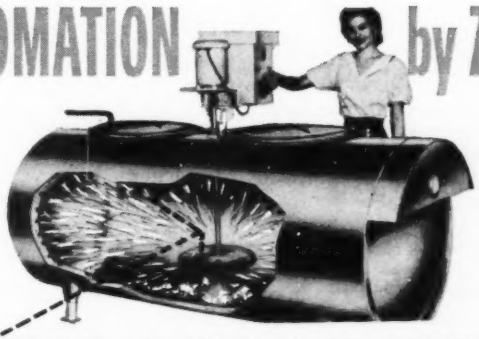

TORNADO in Milk Tank CUTS CLEANING Time!

The girl above, with a touch of her fingers, controls a tornado . . . an automatic, *cleansing* tornado in a farm milk tank. Simply turning a control knob starts Zero's Spatter-Spray washing up for you. This exciting new labor-saver is attracting national attention.

Exactly the same design features that have always made Zero's round vacuum tank easier to *brush* clean make it possible today to wash *automatically*. It's a logical development of Zero's Super Strainer, direct cow-to-tank hook-up, and other Zero labor-savers.

Mechanically, it's simple. The variable speed motor turns the agitator at low speed during cooling, at a faster speed for butterfat testing. When the tank is empty the agitator spins at top speed . . . to wash, rinse and sanitize.

Zero offers you a tank with a future. Send post card today for complete information.

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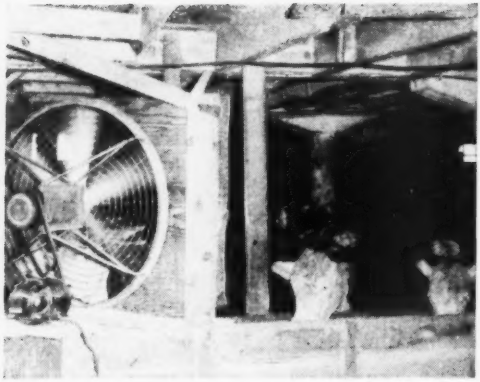


Fan belted to ½ hp motor does a good job of moving air over 100 Herefords on Peacock farm in Indiana. The 36-inch fan, with guard and screen protection, is belted to run at 500 rpm. A continuous duty motor is used. The operation is manually controlled.

Keep Cattle Cool

Man-made barnyard breezes provide comfort plus fly-control

By HUGH J. HANSEN

Hot weather and stuffy, unventilated areas makes us, as individuals, feel uncomfortable, listless, and lazy. It may even make us lose our appetites and as a result lose weight.

It is easy to understand, therefore, why such conditions can cost the beef producer both time and money. He wants his animals to eat well and put on as much weight as possible.

Research Shows Benefits

The University of California in cooperation with USDA did some research recently on finding a practical and economical method of cooling cattle in confined areas. They found that a fan blowing a breeze over the cattle made the animals more comfortable. The feeders in the windy pen ate from 4 to 24% more feed per day and put on up to 80% more weight per day than similar groups in pens without fans.

Myron Peace Peacock of Fairmount, Indiana, has put this idea to use and says it certainly is worth-while. He has 100 Hereford feeders in a confined, roofed over feed shed. He mounted a 36 inch fan in one corner of the shed to circulate air over the cattle. He reports that besides cooling the animals it helps in fly control since flies are less annoying in moving air.

"Top quality hay just can't be made without mow finishing," says Rudolph A. Moser (right). He and his son, Ben (left), used two of these 1 hp portable hay driers last season and plan to use three this year. The same fans are used for drying other crops.

Top Quality Hay

Barn drying preserves the nutrients nature put in the plant

By DAVID N. STILES

Haying methods changed last year on the Moser Farm near Ellington, Connecticut. They cut their first hay early in June. Three additional cuttings were made later in the summer. Portable hay driers were used to reduce costs and help them produce 125 tons of high protein roughage.

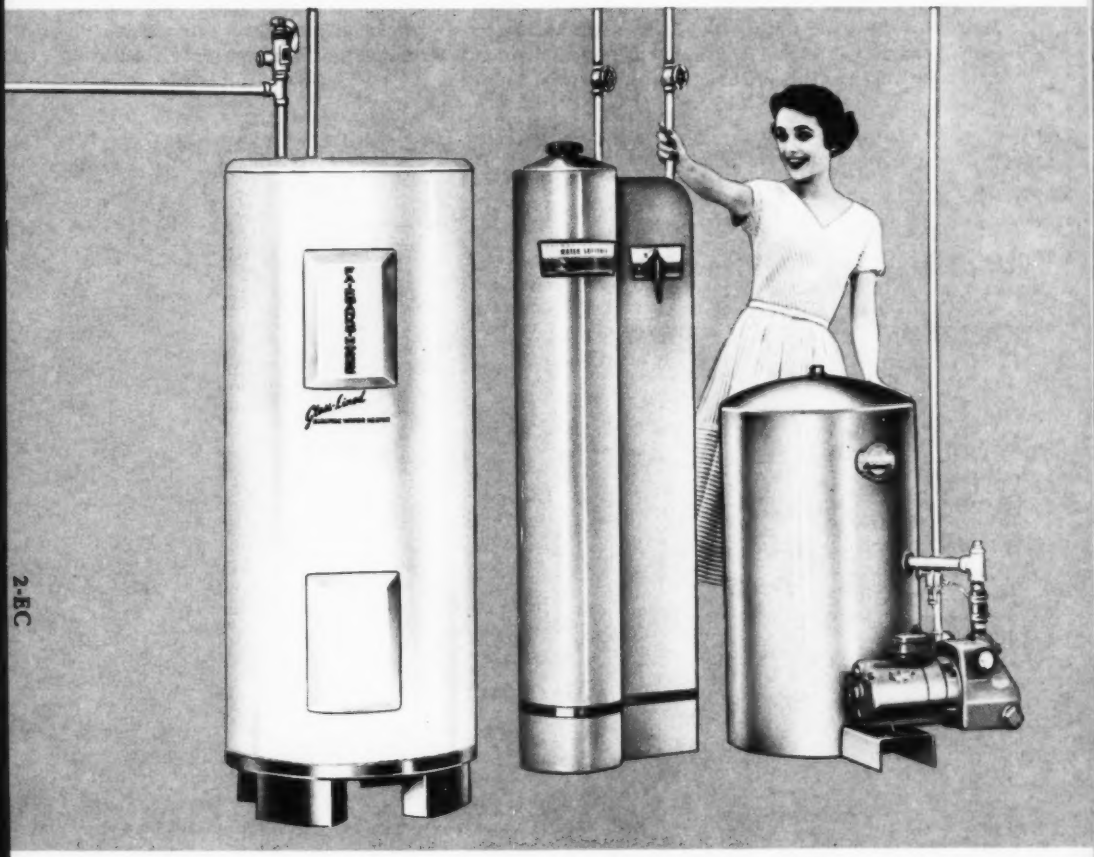
The hay is cut and partly dried in the field. Then it is baled and the bales are stacked in pyramid shapes about 15 feet high around the hay drier. No air ducts, slatted floors, or heavy wiring were needed. And, because it is portable, drying could be done in the mow, in a shed, or on the wagon.

The Mosers used two portable driers last year and plan to add a third this year. They want to increase production and also use the fans for drying other crops.

Actually, the most significant change was that they were now able to make good hay because of *proper timing*. The hay could be harvested at the most opportune time as far as stage of maturity is concerned. To obtain the highest nutritive value (carotene and protein), it must be cut before becoming too mature or overripe. Hay that is high in carotene also contains a goodly amount of vitamin A. Their hay drying equipment permitted them to "make hay" when the hay was right, not just when the weather was right.

2-EC

FAIRBANKS-MORSE COMPLETE WATER SERVICE SYSTEMS



2-EC

For better living . . . less work . . . more profits!

You can't buy anything that provides so many can't-do-without benefits as a complete F-M water service system—pump, heater and softener. And the cost is surprisingly low!

Imagine having running hot water, heated and softened, wherever you want it in your home, barn or other farm locations. Think of the hard work an F-M system can save you. And consider how much more money you can make from increased sales of livestock, poultry, eggs and milk!

The following pages will acquaint you with F-M farm and home water service equipment. For details—and cost of installation of one, two or all three units (as little as $500 for all three)—see the nearest F-M dealer, as listed on each page. Or write Fairbanks, Morse & Co., Chicago 5, Ill.

FAIRBANKS-MORSE

a name worth remembering when you want the BEST

WATER SYSTEMS • GENERATING SETS • MAGNETOS • PUMPS
MOTORS • SCALES • DIESEL LOCOMOTIVES AND ENGINES

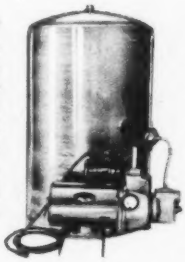
2-EC

There's an F-M pump to meet every pumping problem

Shown here are only three of many models of pumps available through your F-M dealer. Like all F-M pumps, they are built to the highest standards of quality in design, materials and workmanship. Every pump is guaranteed to deliver its rated capacity as described on the rating tag. Your F-M dealer will estimate your maximum need for water and recommend the pump that will deliver the volume you need.

F-M Submersible Pump. Operates silently at bottom of well. Water-lubricated motor. One pipe in well casing. Uses smaller motor—less power. Delivers up to 3450 gph. at shallow settings and will pump at settings to 500 ft.

F-M Convertible Ejector Pump. Four models—⅓ to 1 hp. Convertible to deep well service, from standard to high pressure and from double- to single-pipe installation. Self-priming. One moving part. Complete, ready to plug in and use. Capacities to 870 gph. at shallow settings and will pump at settings to 100 feet.



F-M Deep Well Working Heads. For settings from 100 to 600 ft. Motors—¼ to 3 hp. Delivers to 290 gph. at 600 ft. under 40 psi pressure. Economical to use. Low power cost. Pumps on both strokes of cylinder. For well casing sizes 3 to 6 in. Self-priming. (Beam balance assures perfect pumping alignment.)

ALABAMA

SELMA ..... H. J. Smith Pump Co.

ILLINOIS

BARRY ..... Altman-Carr Hardware
BATCHTOWN ..... Calhoun Drilling Co.
BELLEVILLE ..... Quality Farm Equip., Inc.
BENSENVILLE ..... Lindberg & Stringham
CARROLLTON ..... Wildhagen Hardware
CENTRALIA ..... Electric Motor Service
CHICAGO RIDGE ... John Oudsteyn Pump Sales & Serv.
CISNE ..... Anderson & Mix
DIETERICH ..... Probst Electric
EDWARDSVILLE ..... Morrison Farm Supply
ELDRED ..... Wildhagen Hardware
GALESBURG ..... Hoben Bros.
IRVINGTON ..... Fortmeyer Electric
LIBERTY ..... Linnemeyer Farm Supply
MURPHYSBORO ..... Beckman Implement Co.
NEW LENOX ..... Will County Well & Pump Co.
NOKOMIS ..... Nokomis Implement Co.
OKAWVILLE ..... Pettersen Electric Supply
PITTSFIELD ..... Ideal Hardware
QUINCY ..... Geo. Keller & Son's Co.
RAMSEY ..... Ed Hoffman Implement Co.
WATERLOO ..... Metzger Equipment Co.
WAYNE CITY ..... Chase Hardware
ZION ..... R. C. Hoover Well Drilling

INDIANA

ELKHART ..... Turnock Equipment Co.
SUNMAN ..... The Farm Shop

KENTUCKY

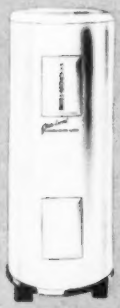
BOWLING GREEN ..... Geo. McGinley Supply Co.
BURLINGTON ..... Calvin Cress & Sons
CAVE CITY ..... D. Y. Bybee Plumbing
COVINGTON ..... A & M Supply Co.
GLASGOW ..... R. H. Norris & Sons Supply Co.
HOPKINSVILLE ..... Planters Hardware Co.
LEXINGTON ..... Ecton Supply Co.
MONTICELLO ..... Verkamp Corp. of Ky., Inc.
MOREHEAD ..... Monarch Supply Store
OWENSBORO ..... Union Pipe & Supply Co.
PIKEVILLE ..... Call Bros. Hardware
RUSSELLVILLE ..... Herndon's
SACRAMENTO ..... Redfern Electric & Plumbing Service
SOMERSET ..... Graybeal Electric Co.
WILLIAMSTOWN ..... Jim Blair Plumbing & Heating

MICHIGAN

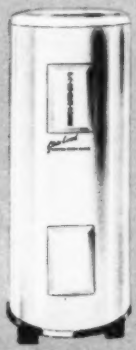
ADRIAN ..... Charles Ruesink
ANN ARBOR ..... Ann Arbor Well Drilling Co.
BIRMINGHAM ..... L & L Contractors, Inc.

A farmer's No. 2 "must-buy" appliance — an F-M Electric Water Heater

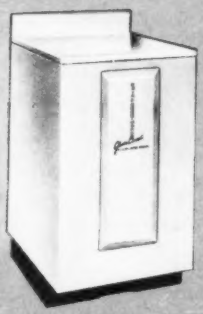
Next to an automatic electric F-M water system, an F-M electric water heater is important. It saves time in the milkhouse, barn and home. Think of having all the hot water you need for baths, washdays, dishes, cleaning chores, sterilizing dairy utensils, and shampoos. Shown here are three of the 20 models available through your F-M dealer.



F-M Glass-Lined Electric Water Heaters. Round tank models. Capacities 30 to 82 gal. "Equator" heating elements (wrap-around). Supersensitive thermostat. Safety thermal cutout. Fiberglas insulation holds heat in . . . keeps outside tank cover cool. Finished in easy-to-clean white enamel. Available also with galvanized tank.



F-M Dairy Barn Water Heater. Glass-lined or galvanized tank. 82-gal. capacity. Thermostat set to give 160° F. water—for sterilizing. Two 2000-watt heating elements. Available with inter-matic time switch which cuts-in in plenty of time to heat tankful before you use it and turns off power when milking chores are done.



F-M Glass-Lined Electric Water Heaters. Table-top models. Capacities 30 to 52 gal. Working height, 36 in.; over-all height, 40 in. 25 in. deep; 21- or 24-in. width, depending on capacity. Fiberglas insulation. Wrap-around "Equator" heating element. Safety thermal cutout. Supersensitive thermostat. White enamel finish.

All models are available with "Fast Forty" heating elements that speed up recovery.

MICHIGAN (Continued)

BIRMINGHAM	Len Patterson Co., Inc.
CLARKSTON	Jim Price & Co.
DETROIT	B & R Well Drilling Co.
FARMINGTON	J. N. Cauffiel
MILFORD	Fettig's Pump & Well Service
NEWPORT	Olin Marshall Co.
OAK PARK	O. O. Corsaut Co.

MISSISSIPPI

BELZONI	Minyard Well Co.
COLUMBIA	Dean Griner Well Drilling
CRYSTAL SPRINGS	Ben Burney & Son
GULFPORT	Paine Supply Co.
MAGNOLIA	Pike Appliance & Hardware
NATCHEZ	Hammett Supply Co.
PICAYUNE	Quick & Grice, Inc.
ROLLING FORK	Cortright Electric Co.
TYLERTOWN	Willis Hardware Co.
YAZOO CITY	Saxton Gardner Hardware Co.

OHIO

ALLIANCE	Alliance Electric Co.
APPLE CREEK	Jonas E. Miller
ASHLAND	Town & Country Water Service
BELLEFONTAINE	Electric Motor & Supply Co.
BERLIN	Berlin Plumbing & Pump Service
CAMDEN	Camden Hardware Co.
CELINA	C. W. Jackson & Son
CHESTERVILLE	Chesterville Hardware
COLUMBIA STATION	North Eaton Hardware
COSHOCTON	Wagners Supply Co.
DAYTON	R. B. Billman
DUBLIN	Dublin Pump Co.
ELIDA	Fred Brenneman Plbg. & Htg.
GALLIPOLIS	Buckeye REA
LANCASTER	Clement Welch
MALVERN	Dunlap Plumbing & Heating
MALVERN	Robertson Plumbing & Heating
MARIETTA	Hall Bros., Inc.
MASSILLON	Archer Pump Service
MILLERSBURG	Millersburg Equity Co.
MINERVA	Henry Aultfather Drilling
NEWARK	Main Hardware Co.
NEWCOMERSTOWN	Gray Electric & Plumbing
NEW PHILADELPHIA	Buckeye Machine & Supply Co.
NEWPORT	Dave Edgar Drilling Co.
OLMSTED FALLS	P. Simmerer & Sons
PETTISVILLE	L. B. Frey & Son
PORTSMOUTH	Lute's Pump Sales & Service
PORTSMOUTH	Market St. Hardware
SHAUCK	Beam Pump Service
TOLEDO	Whitney Electric

Soft water—the new farm necessity

There are few farms which cannot benefit from a Fairbanks-Morse water softener. Softened water uses less soap or detergent . . . makes them work harder. Makes clothes cleaner, brighter. Speeds all cleaning chores. Foods and beverages prepared with softened water taste better. Prevents clogging of hot water service lines. Pays for itself in time, money and work saved.

F-M Automatic Water Softener. Automatically regenerates—with infrequent filling of brine tank. Brine tank is Epon-lined for longer life. Softener tank finished in Epon and wrapped in Fiberglas insulation to prevent condensation. Steel cabinet finished in baked-on enamel.

F-M Semi-Automatic Water Softener. Single valve controls regeneration process. Inside tank coated with rust-inhibiting Epon. Finished outside in baked-on white enamel. Only 58 in. high. Floor space, for largest model, only 16 by 23 in.

TENNESSEE

CARTHAGE	Hackett Hardware Co.
CLARKSVILLE	The Elder-Conroy Co.
KINGSPORT	Jefferson Sales Corp.
KNOXVILLE	Tennessee Mill & Mine Supply Co.
LAWRENCEBURG	Roberts Hardware Co.
LEWISBURG	Butler Bros. Farm Store
MURFREESBORO	Osborn-Harrell-Hoover
SEVIERVILLE	Jack Terry Drilling Co.
SPARTA	M. & H. Hardware Co.
WINCHESTER	Vaughan Hardware Co.

WISCONSIN

ALLENTON	Farmers, Inc., Implement
ALMENA	Wanner Hardware
AMERY	Burman Hardware
ASHIPPUN	Kinkel Hardware
BAY CITY	Bay City Hardware
BOYCEVILLE	Rubusch Sales & Service
BRODHEAD	Newman Seed & Feed Co.
BROWNTOWN	Montgomery Electric
BURLINGTON	Reineman's
CHETEK	Farmers Store Co.
CLAYTON	Dalberg Hardware
CUMBERLAND	W. Riley Well Drilling
DARIEN	Robert I. Oleston
DARLINGTON	LaFayette County Co-op Oil. Co.
DELAFIELD	Butler Pump Service Co.
ELLSWORTH	Erickson Electric
FOND DU LAC	Horning's Pump & Motor Serv.
FOUNTAIN CITY	Norman Ratz Plbg. & Htg.
GALESVILLE	Finch Well Drilling
GRANTSBURG	I. Martinson Plbg. & Htg. & Pump Serv.
HARTFORD	P. A. Mueller & Sons, Inc.
KENNAN	Kennan Lumber
LADYSMITH	Kent's Ace Hardware
LUCK	L. P. Peterson Appl.—Plg.—Htg.
MEDFORD	Mathews Home Service Center
MILWAUKEE	G. J. Schaut
MINONG	Stigney Lumber Co.
MONDOVI	Mondovi Hardware Co.
NEW AUBURN	Carlson Plbg. & Htg.
OSCEOLA	George Lutz & Son—Well Drilling
PARK FALLS	Wollerman Plbg. & Htg.
PHILLIPS	Warga Bros. Garage Inc.
RICE LAKE	Thomas & Johnson Scale Serv.
ROBERTS	Louis Brathall Plbg. & Htg.
SHELDON	Brown's Store
WATERFORD	Thomas J. Maas & Son

Electricity in
THE FARM HOME
EDITED BY ELINOR C. WUEHRMANN

Problem Water—Symptoms & Cures

Well water is a raw material. It is up to you to determine what treatment it needs for more efficient utilization

Water under pressure, once considered a luxury, is now a necessity on the modern farm and in the modern farm home. From brushing one's teeth first thing in the morning to taking that hot shower before bed, water is in constant use. It keeps your home, your clothes, your dishes and your person clean. It is necessary for drinking and for cooking. Around the farmstead, it keeps buildings and equipment clean and makes for healthier, more productive livestock.

Unless your private water supply is one of the very few that is pretty nearly perfect, it will need some kind of treatment to make it safe and more useful as a solvent.

No doubt you frequently, or at least now and then, stop to analyze your farm business to see if there is a way to make it run more efficiently. But have you ever analyzed your farm water supply? Perhaps there is a way in which it can be made more efficient. The addition of a filter to remove unwanted minerals or organic materials, or a softening unit to correct the most common rural water problem—hardness—may make a great difference in your water's cleansing powers.

How long has it been since you had your water supply tested for purity? It may have been safe several years ago—but is it now? A water purifier may be needed to maintain it at a safe level.

There are ways in which you can detect "troubled water" and there is equipment available to treat any problem that you might have. Following is a list of "symptoms" of various water conditions and recommendations for the type of equipment most suited for correcting the difficulty. Read it over and see if your water supply needs treatment to allow it to perform at its best.

CONTAMINATION

Symptoms: There are no visible signs of contaminated water. Even water that tastes good and is sparkling clear may carry dangerous bacteria. The only way to be sure about your water is to have it tested by your local or state Health Department. Shallow wells are the most dangerous since they are more susceptible to contamination from surface seepage and sub-surface drainage. But even deep wells, sealed with a sanitary well cap, are not immune to contamination. And just because your well water was pronounced safe by recent testing does not mean that it will be safe next year, or even next week. The only sure way of having safe water all year long, every year, is through the installation of a water purifier.

Cure: Water purification through use of an ultra-violet sterilizer or a chlorinator, such as the one shown above, is good insurance for any private water system. A solution of ordinary household chlorine-bleach, in very small amounts, is automatically injected into the water system. For those who do not like the taste of chlorine in drinking water, a dechlorinator may be used on the drinking water tap.

Continued from page 23

STAINING, BAD TASTE OR ODOR

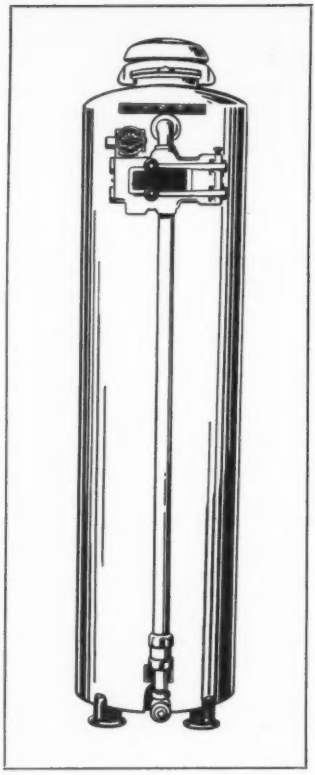
Symptoms: *Iron or manganese* are found in well water supplies all over the country. The water is clear when drawn from the faucet but becomes filled with red rust when allowed to stand. It leaves rust stains on fabrics, plumbing fixtures, china, glassware and silverware. If the stain is black instead of red it indicates the presence of manganese.

Another unwanted foreign material frequently found in water is *Hydrogen Sulfide*. It can be recognized by a "rotten egg" odor, tarnishing of silver, yellow to black stain on plumbing fixtures, rusting of water system and unpleasant taste and appearance of food. In some cases water is very *corrosive* in nature. It is recognized by clogged water pipes, leaky water heater, rust stains on fabrics and dishes and blue stains on plumbing fixtures. *Organic materials* are sometimes found in private water supplies. Water containing organic materials is usually yellow or brown in color. It will leave stains, similar to rust stains, and ruins the flavor of foods and beverages. *Turbidity* is another prevalent problem. In this case the water has a cloudy or muddy appearance due to fine particles of silt, sand or mud suspended in it.

All of the above problems can be successfully treated by the installation of the right type of water filter or solution feeder in the water system.

Cure: Filtration can eliminate many of the problems that are so often connected with private water systems. A filter (see drawing above) can be used for removal of iron, manganese, objectionable odor, taste and color, sediment, or for neutralizing acid, depending upon the chemicals used in the tank.

Chemical feeders (see picture above) can be installed in the water system to take care of iron or acid water. In some cases they may be used to combat hydrogen sulfide. For treatment of iron salts, the unit feeds polyphosphate into the water. For acid water an alkaline feeder is used to feed an acid neutralizer into the water. These feeders are recharged, as shown here, about once every month.



HARDNESS

Symptoms: It is estimated that hard water occurs in at least 85% of the United States and Canada. One of the easiest ways to recognize it is to observe your own laundry habits. If you have to use excessive amounts of soap or synthetic detergent to get suds, if you use bleaches and fabric brighteners to counteract a "gray wash" and are constantly looking for new laundry additives to help you get that bright, clean wash you're striving for, then chances are your water is pretty hard. Hard water also causes a ring of soap curd around the bathtub, spotted and filmed dishes from an automatic dishwasher, scale inside teakettles, lowered efficiency and fuel wastage in water heater, clogged hot water pipes and poor cooking results of peas, beans and other legumes.

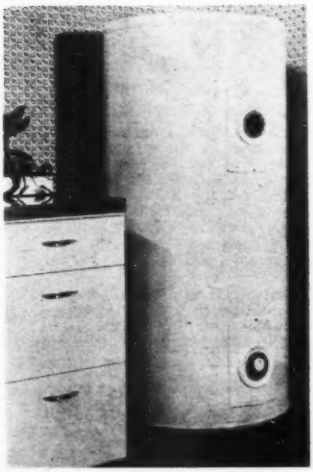
Hard water costs the home owner a great deal each year in added detergent and laundry aid purchases, plumbing repairs, replacements for clothing and linen, and in just plain hard work. If you believe your water is hard you can obtain a free test by taking a sample of water to your local water softener dealer. He can tell you exactly how hard your water is and advise you as to the size of the softener unit you'll need to correct the situation.

Cure: Water softener unit. Hard water passing through a softener exchanges its hardness

minerals for sodium ions. The sodium is harmless and does not separate out of the water as lime scale when heated or react with soap as hardness curd. Softener units must be flushed and regenerated from time to time. In some units this is accomplished automatically. The unit pictured on the right is completely automatic. It contains a softener tank and a brine tank for regeneration, controlled by a time clock. Manual models are also available. In this type flushing and regeneration must be done by hand. Either type will provide wonderfully soft water for household or farm choring tasks.

HEATING

Symptoms: Heating water is a problem that faces everyone. You can recognize an inadequate, inefficient or dangerous water heating system by the following symptoms: Family squabbles because the first one to take a bath used up all the hot water; water hot for the first load of wash but cold for the second load; water not hot enough for efficient operation of laundry or dishwashing equipment. (This may be due to heat loss as the water travels a distance from the heater to the equipment. Flame-type water heaters are usually located in the basement, due to venting problems, and water from them must travel a distance to reach its point of use); apprehension on the part of the family, due to fear of fire or asphyxiation caused by leaking gas from the heater; no hot water every so often because fuel tanks were not exchanged on time.



Cure: All of these water heating problems can be quickly eliminated through the installation of an electric water heater. Since no venting is required, electric water heaters may be placed right in the kitchen or laundry —where the most hot water is needed. Plenty of hot water for all the family's needs is provided by the 82-gallon unit pictured on the left. This unit is conveniently installed in the corner of the kitchen. Electric water heating is safe, clean, noiseless and dependable. There are models available in many different sizes to suit your individual needs. Counter top models are also available, as are quick-recovery models, which provide ample hot water from a small storage tank. Whether in the home or dairy, an electric water heater is the best bet for dependable hot water service. □ □

A Place For Everything

Not everyone is as lucky as Mrs. George Gregoire of Merrifield, North Dakota. Last year she and her family had the great joy of planning a new four bedroom home.

Mrs. Gregoire spent considerable time in planning the kitchen. Like any farm homemaker she was interested in accomplishing her household tasks speedily and efficiently in order to have more time to spend with her husband and three children.

After much thought a "U" shaped kitchen was planned with an eating area on the fourth wall. The kitchen is divided into different areas for the various kitchen tasks.

Adequate storage and counter space was planned. The Gregoires are an electrically minded family, so a special storage space for portable appliances was planned. Right now this storage cabinet houses the toaster, waffle iron and electric frypan. But there's plenty of room left for the additional portable appliances they will gradually add to their electrical family. □ □

Special cabinet for portable appliances was planned in this new farm home.

COOL FASHIONS FOR SUMMER DAYS

9051—Smart classic with convertible collar, button front, handy pockets. Printed Pattern in Misses' Sizes 12-20; 40-42. Size 16 takes 4⅛ yards 35-inch.

4726—Two-piece chemise for the half-sizer. Bodice has smart, relaxed lines; skirt tapers gently. Printed Pattern in Sizes 14½-24½. Size 16½ takes 3⅞ yards 35-inch fabric.

9000—Neat, side-buttoned style for the shorter, more rounded figure. Three sleeve versions. Printed Pattern in Half Sizes 14½-24½. Size 16½ takes 3⅜ yards 35-inch fabric.

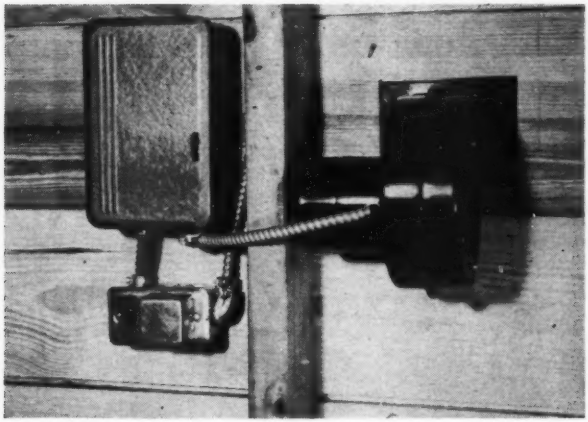
4773—Slenderizing version of fashion's favorite jacket dress. Printed Pattern in Half Sizes 14½-24½. Size 16½ dress takes 3¼ yards 35-inch fabric; jacket 2½ yards.

9379—JIFFY-CUT Printed Pattern includes 3 summer blouses. Each complete blouse pattern is one piece of tissue; pin to fabric, cut entire blouse at once. See pattern for yardages. Misses' Sizes 10-18.

9103—Three-piece wardrobe for baby or toddler. Printed Pattern in Sizes 6 mos., 1, 2, 3 years. Size 2 dress takes 1⅜ yards 35-inch fabric; petticoat, ⅞ yards; playsuit 1⅛ yards.

9205—Casual step-in style with squared neckline, pleated skirt. Perfect for plaid or checked gingham. Printed Pattern in Misses' Sizes 12-20; 40. Size 16 takes 5¼ yards 35-inch fabric.

Send THIRTY-FIVE CENTS (in coins) for EACH pattern to:
ELECTRICITY ON THE FARM, P. O. Box 42, Old Chelsea Station, New York 11, New York
Add FIVE CENTS for EACH pattern for First Class mailing.
IN CANADA: Patterns are 40c each. 60 Front St. West, Toronto 2, Ontario



Squirrel-cage fan, mounted in end wall of attic, provides a complete air change in attic every ten or eleven minutes. Time clock turns fan on at sundown, shuts it off at midnight. Fused switch below time clock provides protection against motor overload and also makes it convenient to shut off clock and fan unit during winter months.

If your attic stores heat like an oven, you can prevent this heat from moving to the rest of your home by installing an

ATTIC VENTILATOR

Here is an idea that you can use to advantage if you have a closed-off, uninsulated attic. It will mean both a cooler attic and a more comfortable living or sleeping area immediately below the attic area.

Uninsulated attic spaces, even those with louvered ventilators, build up a lot of heat during warm, sunny days. This heat remains trapped in the attic space after the outdoors cools down during late evening. As a result, this trapped heat acts as a furnace and some of it is actually transferred through the attic floor to living or sleeping quarters below.

A small exhaust fan, mounted in one end of the attic as shown here, will provide a positive air exchange. The time clock control turns the fan on in the evening and cool outdoor air is brought in through a louver at the opposite end of the attic. The fan should be of adequate capacity to provide at least one complete air change in the attic every ten to fifteen minutes. A screened hood is mounted on the outside wall to keep birds or squirrels out and to prevent rain or snow from reaching the fan.

The blower shown above uses a quiet operating, efficient squirrel-cage type multiple blade fan. The fan is factory balanced to prevent any vibration noises. It is rated to deliver 150 c.f.m. of air at 2800 rpm. The motor is a shaded pole type which operates on 115 volt power and requires only 100 watts. It is designed for continuous operation should you desire to use it on a round-the-clock basis. □ □

INSTALL A
DEMING
WATER SYSTEM

A dependable Deming Water System gives you plenty of water . . . when you need it . . . where you need it! Now and in the future, make farm living easier, more profitable, through an ample water supply for farm and home use.

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on how a Deming Pump or Water System can be an important contribution to your farm future. Fill in the attached coupon and mail today.

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504 Broadway, Salem, Ohio

Please send me your bulletin on:
☐ Water Systems
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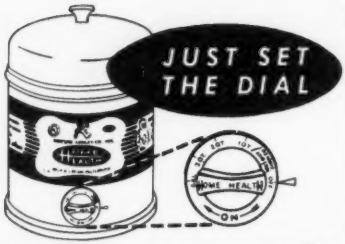
City_____ State_____



to pasteurize a quart or a gallon —in the fastest time ever!

HOME HEALTH **"Quick-Set" PASTEURIZER**

Now you can pasteurize the amount of milk you need as you need it . . . one, two, three quarts or a gallon at a time. Just set the dial for the right amount . . . the rest is automatic. The only home pasteurizer with this new engineering development that takes far less time yet assures greater accuracy. Laboratory tested for complete kill of all harmful bacteria.

CUTS PASTEURIZATION TIME 40%

You can pasteurize a gallon in 40% less time . . . a quart in less than 15 minutes! Makes it easier, quicker, than ever to have disease-free milk.

COLORS *to match your kitchen*

Available in decorator colors of yellow, pink, turquoise, and white. You'll be proud of its beauty, its convenience, its dependability. 1 gallon capacity. Guaranteed for 1 year.

Ask to see the new HOME-HEALTH "Quick-Set" Pasteurizer at your dealer or write for FREE FOLDER.

WATERS CONLEY CO., INC.
Dept. E, ROCHESTER, MINN.

DRAINS cellars, cisterns, wash tubs; **IRRIGATES - CIRCULATES - SPRAYS** $7.95

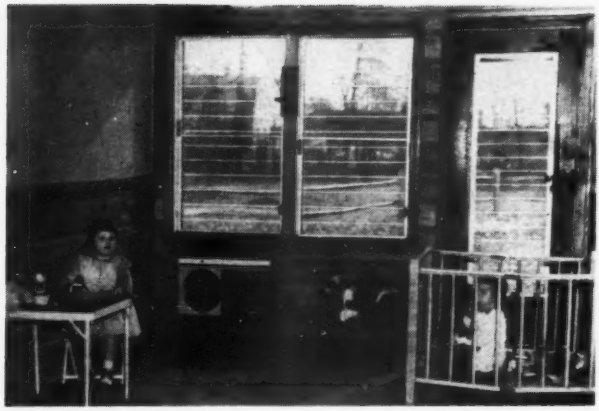
1,001 uses. Stainless shaft. Won't rust or clog! Use 1/6 HP motor or larger . . . ¾ HP for up to 3000 GPH; 450 GPH 80' high; or 1800 GPH from 25' well. 1" inlet; ¾" outlet. Coupling included free. **$7.95**

Heavy Duty Ball-Bearing Pump
Up to 7,500 GPH; or 3000 GPH from 25' well. 1¼" inlet; 1" outlet **$12.95**
Postpaid if cash with order. MONEY BACK GUARANTEE.

LABAWCO PUMPS, Belle Mead 49, New Jersey

SAVE $11.00

NORELCO "Speedshaver" Men's Electric Shaver. Latest model, brand new and fully guaranteed. Complete with case, cord and cleaning brush. Regularly retails at $24.95. Now on sale for $13.95 plus 70 cents mailing costs or $14.65 total. All orders filled within 24 hrs. Your money back if you are not fully satisfied. Send check or M.O. for $14.65 to:
J. BROOKS, Dept. 191, Box 212, St. Louis 3, Mo.



Children like to play inside on terribly hot days. A room-unit heat pump may be neatly installed (thru-the-wall) in a new, built-on room. Such a unit will keep the room cool in the summer and provide heat on cool days.

Seven Functions of An Air Conditioner

The modern air conditioner performs seven important functions as follows:

COOLS: You live each day feeling refreshed—even when it's sizzling hot outside. Helps you sleep better, eat better, work better, feel more energetic on hot summer days. And—air is automatically maintained at your comfort level by the automatic temperature control!

DEHUMIDIFIES: Literally cool-dries the air for you on hot, sticky, humid days. You breathe comfortable, healthful, invigorating air—free of oppressive humidity.

A cool kitchen lightens the homemaker's work load in midsummer and is a benefit to every member of the family. Note that placement of the unit is in the upper portion of the window and does not obstruct the view.

Farm and family finances can be figured more quickly and accurately if Dad has a cool spot in which to work. The unit is installed in front of the desk. Air streams can be directed to the left or right or over his head.

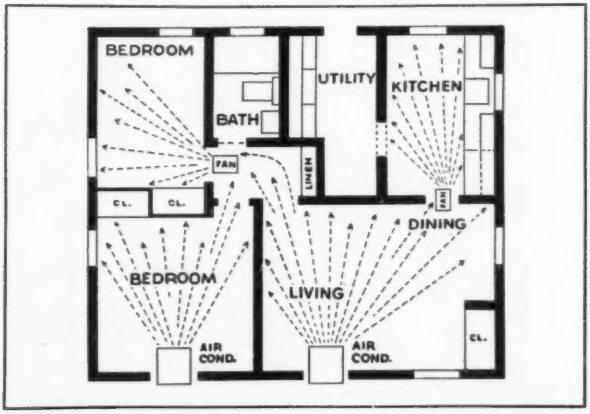
FILTERS: Air is automatically cleaned by passing through a heavy duty filter. Irritating pollen and dust are removed. Home furnishings stay cleaner, and family stays healthier.

EXHAUSTS: Clears the room of smoke, odors and stale air in a matter of minutes. Keeps inside air sweet, fresh, clean. No uncomfortable drafts caused by open windows.

VENTILATES: Brings fresh, filtered air in from outside when room feels stuffy. Gives your room a complete change of air in just a few minutes.

HEATS: Many of the new units are designed to take the chill out of cool mornings and evenings. Enables you to enjoy more year-round comfort from your air conditioner.

CIRCULATES: Keeps inside air in gentle, constant movement. Important because stagnant air acts as a suffocating blanket, makes you feel uncomfortable. □ □



Two room air conditioners can be used to cool four rooms instead of two, as shown here. Units are installed in windows opposite doors of rooms not air conditioned. Electric fans help push air from one room to another.

the BIGGEST built-in oven EVER

Monarch Fully Automatic Oven, 6757.5 CUBIC INCHES, with "twin-lite" oven control, automatic pre-heat push button, clock-timer, "Smokeless" broiler, removable oven parts and extra heavy wiring and insulation throughout. What's more, control knobs are ABOVE the oven to give perfect eye level control. Divided top or clustered top surface units. Controls can be mounted safely on wall out of reach of children. Write for information.

Monarch

RANGE COMPANY
7058 Lake Street
Beaver Dam Wisconsin

Because WATER is so important . . .
depend on GOULDS

For deep or shallow wells, Goulds offers a full line of water systems . . . efficient, long-lasting, *dependable.*

One example:
GOULDS JET-O-MATIC

A completely packaged jet pump for fast installation in deep or shallow well systems. Easily *converted* if water level changes. 5 sizes; capacities up to 1570 GPH. Compact, fully self-priming, economical.

See your Goulds dealer, or mail coupon.

GOULDS PUMPS, INC.
Dept. EF-5, Seneca Falls, N. Y.
Please send free pump booklet and name of nearest distributor.
Name.....
Address.....
.....

The new dual-purpose Dempster Convert-o-jetmaster water system allows you to change from shallow-well to deep well (down 90 ft.) operation at little cost—*regardless of most water conditions.* Long-life, stuffing box filters out abrasive particles. Removable bronze sleeve stops wear on motor shaft for added years of trouble-free service. Choice of powerful ½ H. P or thrifty ⅓ H. P. motor. Delivers up to 835 gals. per hour.

- Better seal—friction free, more pumping power
- Cost-free conversion—all is furnished except pipe

See your Dempster Dealer or write

DEMPSTER MILL MFG. CO.
600 South 6th St Beatrice Nebraska

3 ANSWERS to PROBLEM WATER in ONE

DIAMOND 3T UNIT

You can *Filter, Soften* and *Remove Iron* from your water supply with this new and revolutionary Diamond 3T Unit. Completely *automatic;* periodic replenishing of salt is all that is required. Guaranteed by one of the oldest manufacturers of water conditioning equipment. Write

OSHKOSH FILTER & SOFTENER CO.
Oshkosh, Wisconsin

Automatic appliances, such as this frypan, need no pot-watchers. They mind their own heat, according to the temperature you pre-set.

Serve Ham What Am

It's quickly prepared in electric skillet

Every so often there comes a time when we all have just about half an hour until dinner and a hungry family to feed. There's no problem at all, though, when you have all the ingredients and an electric skillet. This all-in-a-skillet dinner, fit for a king, can be prepared in short order. The tart-sweet tang of real New Orleans molasses does wonderful things for ham, yams and pineapple. Your electric skillet automatically controls its own heat so that you can spend the time you'd otherwise spend watching the pot in setting the table and tossing a salad.

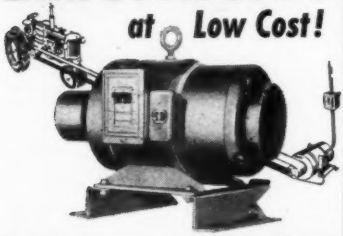
Skillet Quickie

1 tablespoon shortening
¼ cup real New Orleans molasses
Precooked ham steak, ¾ inch thick
4 pineapple slices
Canned yams

1. Put shortening and molasses in electric skillet, pre-heated to 350 degrees.
2. Add ham slice and pineapple slices.
3. Cook 8-10 minutes, turning pineapple as it browns.
4. Turn ham, then place pineapple slices on top.
5. Add yams brushed with butter and molasses, and brown while ham cooks on second side.

No. 2 Regular Edition

EMERGENCY ELECTRICITY at Low Cost!



ONAN Tractor Driven GENERATORS

Belt up to your tractor for all the electricity you need!

NO MORE BLACKOUTS! An Onan generator supplies regular 115/230 volt A.C. power for lights, heating system, milker, brooder, frozen food chest, water pump and all essential equipment. Easy to install. Hook it up in minutes. **Four models:** 3,000, 4,000, 7,000 and 10,000 watts. Complete with belt pulley, double-throw transfer switch, circuit breaker, plug-in receptacle and voltmeter, adjustable base.

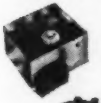
Write for Free Folder!

D. W. ONAN & SONS INC.
2844A University Ave., S.E., Minneapolis 14, Minn.

SAFE, SPARKLING WATER

from your own well or pond!

ELIMINATE IRON AND SULPHUR!
with the CD Pack which combines:



EVERCLOR . . . automatic chlorination to make water safe and to oxidize iron and sulphur.

EVERPURE . . . superfiltration to make water clear, get rid of bad taste and odor.

USED ON FARMS EVERYWHERE—FOR THE BEST WATER IN THE WORLD

Find out how you can enjoy safe, clean water for cooking and drinking. Write today for CD PACK details.

EVERPURE, INC.
2627 West 19th Street
Chicago 8, Illinois

"My portable mixer can be used anyplace there's an outlet. I even take it to church and P.T.A. meetings to help with refreshment preparations."

Have Mixer— Will Travel

One of the newest members of the electric family, the portable mixer, is a pretty handy item to have around. Its small size means that it will take up no cabinet space. Many portable mixers come equipped with a hook so that the mixer may be hung on the wall or on the inside of a cabinet door.

Farm homemaker, Mrs. A. D. Strachan, of Castle Rock, Minnesota, loves her little mixer. She says, "You can work anyplace there's an electric outlet because the mixer is so light and easy to carry around. I appreciate, too, having it as an extra mixer when I am busy with several projects, or am having someone help me."

The small mixers are inexpensive, too. New homemakers appreciate this fact when assembling their kitchen equipment. In fact, one of these appliances would make a wonderful gift for a bride or girl graduate. □ □

Strataflo

SPECIAL CHECK VALVE For Submersible Pumps

MAKE SURE THE NEXT PUMP YOU BUY has Strataflo Check and Foot Valves. Assure better pump operation, improve water supply.

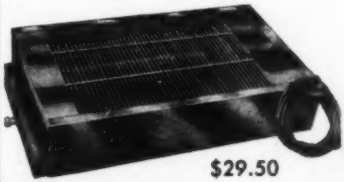
Write for Bulletin 903.

STRATAFLO PRODUCTS, INC.
Fort Wayne 1, Indiana

INSECTS KILLED BY THE BUSHEL

Without Dangerous Poison Sprays or Dusts!

No shock to people or animals. Write for free literature.



$29.50

Flies, mosquitoes, roaches, etc. can't stay away from the INSECT ELECTROCUTOR . . . modern, electrical way to eliminate insects from homes, dairies, greenhouses, etc. Manufactured for over twenty years, so it must be good.

Insects attracted to simple bait go past top grid, are electrocuted by mild, low ampere shock. Night flying insects swarm to machine, lured by light bulb in receptacle.

INSECT ELECTROCUTOR is portable, easily attached wherever most needed. Operates on regular 110-120 volt A.C. current. Foolproof, all-metal construction. 24" x 14" x 8". Simply plug in.

Have comfortable, insect-free porch, rooms all summer . . . clear barns, sheds of disease-bearing insects. Just 30¢ a month to operate. Buy two . . . protect both home and barn. Mail check or money order to:

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P.O. Box 53, E Western Hills Station
CINCINNATI 38, OHIO

THE NEW ELECTRIC WAY
TO
BRAND AND DEHORN

Plugs Into Any 110 Volt Outlet.
Heats Red Hot in 90 Seconds

IT'S FAST—IT'S SAFE

More Than 11,000 Users in all States of the United States, Canada, and Foreign Countries

See Your Local Dealer or Write Direct To

L & H MANUFACTURING CO.
MANDAN, NORTH DAKOTA

FARM BETTER ELECTRICALLY

THE FIRST AUTOMATION IN GRAIN STORAGE

AUTO HUMIDITY CONTROL
DRY-O-MATION
NATURAL DRYING

DRY-O-MATION is drying in storage. It assures uniform conditioning of every layer in every part of the bin. No burning — no over-drying. The DRY-O-MATION humidistat controls humidity of air . . . keeps it from fluctuating . . . calls for heated air natural drying, with an automatic call for heat when needed . . . maintains low-cost, always-favorable drying conditions. Gives you clean, premium quality grain every time.

What's your problem? Tell it to us.

FARM FANS Division of EWING FOUNDRY, INC.
424 S. Pennsylvania St. ● Indianapolis 25, Indiana

Egg grader is located in back of the counter so that Margit Larson can utilize the time between customers. Eggs are cleaned before entering the salesroom.

On-the-Farm Egg Marketing

By CHARLES L. STRATTON

Poultryman Eric Larson, Wakefield, Mass., has an ideal egg salesroom. It is small, compact and located in a small room in the basement of his home which can be reached through an outside door. Eggs are cooled, prices are posted, and every customer receives prompt service.

Outside appearance is mighty important. The Larson home is neatly painted and the grounds are well kept. A sign at the driveway acts as a silent salesman. The salesroom entrance is well marked and when the door is opened a buzzer notifies the Larson household.

The interior of the salesroom is spic and span, and is kept a freshly painted white. A counter type cooler with sliding door is located just inside the door. Larson finds it useful to hold several dozen boxed eggs at a 60 degree temperature. "Saves time when waiting on trade and avoids going into the cooler after eggs," he says.

There is always someone to wait on customers. If a member of the family is not present, Eric has four girls that fill in at intervals. Time isn't wasted between customers as the egg grader is set up in back of the counter and there are always plenty of eggs to grade.

Eggs are brought into the salesroom clean as this poultryman doesn't believe in cleaning eggs in front of customers.

(More on page 33)

Counter-type egg cooler holds several dozen boxed eggs at 60 degrees.

LOVE is THAT form of insanity that prompts a gal to marry the boss so she can work for him for nothing. . . . . BEAUTY SHOP: a place where MEN are RARE and WOMEN are WELL DONE. . . . . GOSSIP: a gal who does everything the HEARD way. . . . . "What IS it that a man likes most about us old-fashioned girls?" "The FACT that you're gradually disappearing." . . . . SODDEN THOUGHT: We often wonder WHY they are called SECRETS of SUCCESS when EVERYBODY is ALWAYS telling them to EVERYBODY else. . . . . EVERSTOPTOTHINK? — OTHER peoples TROUBLES are NOT so bad as yours—but their CHILDREN are a LOT worse. . . . . "STATISTICS show that business is getting better each year, PARTICULARLY for people who prepare STATISTICS. (Jack Herbert in LAFF BOOK). . . . . Hubby to back-seat driving wifie: "Darling, I'LL be glad to DRIVE when YOU get TIRED." . . . . OLD-SAW-NEW-TEETH DEPT.: It takes YOU to make a QUARREL. . . . . IT-HAPPENS-SO-OFTEN: a man marries his SECRETARY—and WINDS UP with a TREASURER. . . . . BEAUTY OPERATOR (looking over new customer) : "Madame is NOT an appointment—madame is a PROJECT." . . . . RICH POET: one who has a DOG HOUSE to keep his DOGGEREL in. . . . . PHILOSOPHER: a fellow who can enjoy a blonde's lovely curls while knowing they have black roots. . . . . SONG OF THE LONESOME GAL: "I always thought that HE Was NOT the only fish at SEA, But NOW it has occurred TOO late—That I am NOT the ONLY bait." (Terminal BEACON). . . . . GOOD OLD DAYS: When you could kiss a girl and taste NOTHING but GIRL!. . . . . FLIP QUIP: "Anyway, a fella kin still take a chaw of tobaccy WITHOUT feeling he OUGHT to offer one to a lady." . . . . Latest PAPER-BACK to hit the reading rack: "MURDER IN THE TELEPHONE BOOTH" or "YOUR PARTY HAS BEEN DISCONNECTED." . . . . PARTING THOUGHT: If you CAN'T find it in the DICTIONARY, the ATLAS or the ENCYCLOPEDIA, DON'T be discouraged. Ask for it in the drugstore. . . . .

Your pun-peddler—DUFFY

Though he does take standard precautions in regard to clean eggs, he washes dirty eggs only in an egg washer as recommended before bringing into the salesroom.

Everything including supplies is neat in this salesroom. The empty boxes are stacked on shelves in a cupboard out of sight. Only the boxes being used at the grader are in view.

A neat sign on the wall at the left of the counter gives the current egg prices and the salesroom hours. This not only saves confusion but avoids marking the price on every box of eggs.

Modern Egg Cooler

Eric has solved his cooling problems by installing an egg cooling unit in the wall of his concrete block eggroom. He installed the cooler in the wall towards his office but suggests that cooling units be placed in outside walls if possible.

He recommends standard insulation procedure for the eggroom. He omitted mineral wool filling in his blocks and claims that if he were doing it again he would definitely use it. The eggroom was built onto the rear of his home and next to the salesroom for convenience.

Eric has found that the egg sales room is the answer to his retailing of eggs. The labor situation made door-to-door delivery routes impractical for him.

Every Friday he advertises his "Farm Fresh Eggs" in the local newspaper. His farm is located near a densely populated area and many city customers come out every weekend to buy eggs. His paved driveway and parking area around the house makes it easy for them to stop and shop.

Business is good and customers like to buy directly from a poultryman when they know he is one who keeps up with modern trends and gives them a high quality, fresh product. And he can do it because he has all the necessary equipment and facilities. □ □

On the farm
Myers Full Faucet Force
saves time and labor

Submersible Pumps for 4" and 6" wells ½ to 15 horsepower

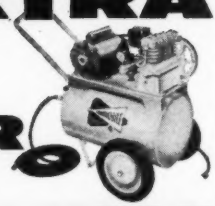
For many maintenance jobs, there's no substitute for lots of water at peak pressure. And there's no substitute for a Myers Submersible when it comes to delivering the most water per horsepower. Up to 12,000 gallons per hour.

Myers
Water systems

The F. E. Myers & Bro. Co.
2605 Orange Street, Ashland, O.
Kitchener, Canada

Myers

EXTRA AIR VOLUME



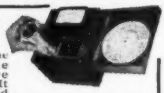
Here's the truly deluxe paint sprayer, the new 4-cylinder TANKMOBILE, Model 4W, with spray gun and 3 gallon material tank for big paint jobs like house or barn. Compact, yet ideal up to 60 psi.

Ask your dealer or write today.

The Campbell-Hausfeld Co.
271 Railroad Ave., Harrison, Ohio

CAMPBELL-HAUSFELD

YOUR GRAIN IS SAFE



. . . when you know the moisture content. The SAFE-CROP Moisture Tester tests all grains. It is accurate, portable and simple to operate. Nothing else to buy, the SAFE-CROP is a precision instrument yet is priced within reach of every farmer.

Write Today for Complete Information

BURROWS EQUIPMENT COMPANY
1316 EL Sherman Ave. Evanston, Ill.

HANCE ELEVATORS

Rapid, dependable elevation of seed and grain is possible in a minimum of space with a Hance Belt and Bucket Elevator—available in five standard sizes, with capacity range from 50 to 1000 bu. per hr.

J. W. HANCE MFG. CO., Westerville, Ohio

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find out about a

Flinchbaugh WAGON UNLOADER

Just Mail This Coupon

The FLINCHBAUGH Company
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Please send information and prices on your complete line of Unloaders.

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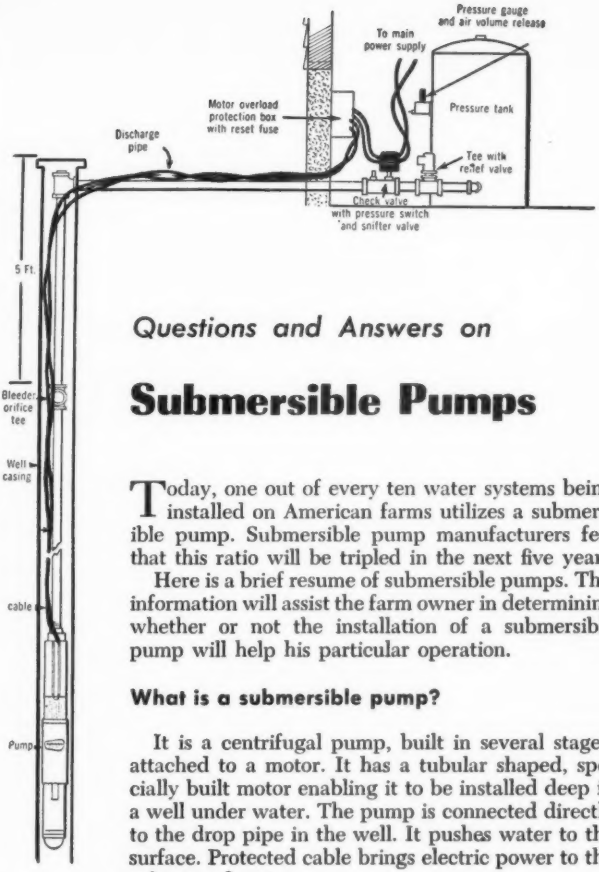

Questions and Answers on

Submersible Pumps

Today, one out of every ten water systems being installed on American farms utilizes a submersible pump. Submersible pump manufacturers feel that this ratio will be tripled in the next five years.

Here is a brief resume of submersible pumps. This information will assist the farm owner in determining whether or not the installation of a submersible pump will help his particular operation.

What is a submersible pump?

It is a centrifugal pump, built in several stages, attached to a motor. It has a tubular shaped, specially built motor enabling it to be installed deep in a well under water. The pump is connected directly to the drop pipe in the well. It pushes water to the surface. Protected cable brings electric power to the submerged motor.

Where can a submersible pump be used?

The submersible pump can be used in virtually any farm well, providing the inside diameter of the well casing is at least four inches, the well is relatively free of sand, and the well yield itself is greater than the operating capacity of the pump.

Submersible pumps are used most efficiently in wells with depths of 80 feet or greater.

What are some of the advantages of a submersible pump?

There are many advantages.

The submersible pump requires only one discharge pipe where other deep well pumps require two or a combination of pipe and shafting. There are no alignment problems. There are no working parts above ground, therefore no additional protection is needed for the pump, such as a well house.

The submersible pump is economical to maintain. Because it is located under ground, manufacturers have built self-maintenance features into the unit. The pump requires no periodic oiling or lubrication.

The submersible pump is regarded as one of the most efficient deep well pumps on the market. All water pumped by a submersible goes directly to its end use. Practically all the power used goes into pumping water. For example, at a given setting, the average ½ hp submersible will produce 9 to 10 gallons of water a minute.

Operating costs of a submersible pump are economical. Since less horsepower is needed to pump an equivalent amount of water, less electrical power is needed.

Submersible pumps are quiet in operation. This is because the working parts are all underground.

Submersible pumps are convenient to install. Only a control box and the pressure tank are located above ground. Therefore a minimum of space is needed. The well can be located a considerable distance from the storage tank and the end uses of the water supply. Offset installations are possible.

What are the disadvantages?

Submersible pumps are not designed to be used in every pumping application. They will not take the place of jet pumps or reciprocating pumps in every situation. Like all mechanical devices, submersible pumps are inefficient to operate if they are installed in conditions other than those recommended by manufacturers.

A submersible pump should not be installed on a weak well. No pump can produce more water than the well can yield. Abrasion will cause wear in submersible pumps. Too much sand in the water will cause a submersible pump undue wear and cut down on its efficiency.

How can one determine whether or not a submersible pump would be the best to install?

The answer should be supplied by a competent pump dealer or well driller who is completely familiar with the well involved and the need for water. Here are basic determinations:

The yield of the water well must be adequate. Various testing methods are used to determine the actual well capacity.

Fluctuations or a drop in voltage will affect the efficiency of a submersible pump. An independent source of power should be available. This is true with any pump installation. The pump controls and power source should be isolated from buildings and other equipment for fire protection.

The well must have at least a 4-inch internal diameter from the top to the pumping depth.

The water in the well must not have a high sand content. The rule of thumb in determining this is to pump water at the desired rate into a quart jar. The sand deposit in the bottom of the jar should not cover an area larger than a silver dollar, one grain deep. If a submersible is used in a well with too much sand the manufacturer's guarantee may be voided.

Summary

With increased uses of water on the farm brought about by more use of water in farm production and more automatic appliances using water in the home, submersible pumps are the answer in many cases.

When considering broadening your water supply, it will be well to consider installing a submersible pump. It may or may not be the right pump for your particular situation. However, when it is, the modern submersible pump, properly installed, can bring you all the water you need and do it on the most economical basis. □ □

IMPORTANT

Check your stored grain for germination

Now's the time to watch your stored grain closely for signs of dangerous sprouting and germination. Warmer weather can mean storage troubles that often cost you many bushels of good grain or even impair the grade of your entire bin.

Fortunately, there's still time to do something about it. You'll safeguard your grain profits if you . . .

Prevent Sprouting Protect Grain Grade

with the

new ROLFES POWERATOR

The new electric Powerator protects your grain from sprouting and other storage hazards by circulating fresh air throughout the entire bin . . . more than 100,000 cubic feet of air each day to keep grain fresh and cool. It eliminates sweat, mold, and crusting . . . increases your grain profits.

Set up your Powerator quickly and easily in less than 45 minutes . . . no special tools or equipment are needed. Operate it as simply as turning on a light.

Protect your grain and profits by ordering your Powerator now . . . only $72.50 at most farm equipment dealers. Just send us this coupon if the new Powerator is not yet available in your area.

ROLFES GRAIN AERATION COMPANIES
Boone, Iowa

Please rush all information on the new Powerator.

Name_____

Address_____

City_____

State_____

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Complete, Fact-Packed Book on the Newest, Modern Way to Cure Better Hay

END the threat of weather damage to your hay crop with a Clay Crop Drier . . . the modern way to cure hay. Cut hay when it's ready—easier to handle, less leaf shatter, more valuable nutrition "locked-in."

Free booklet gives all the facts. Clay "Crop Drying Manual" brings you up to date on newest methods of crop drying. Charts, tables, valuable reference. Write today for free "Crop Drying Manual" or other helpful Clay booklets.

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Please send me free booklets checked.
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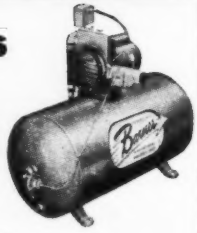
Write name and address in margin of page.

NEW! and of course it's

Barnes Blue Ribbon Quality!



Barnes New Econovert II Self-Priming Jet Water System

Here's positive self-priming that never fails! Here's true shallow-to-deep-well convertibility! It's the latest addition to the industry's most complete line of reliable pumps and water systems. All guaranteed and fully pre-tested! Get handy Water System Selector free from your nearby Barnes dealer or write us, Dept. Q-58.

BARNES
Barnes Manufacturing Co.
Mansfield, Ohio

9831

Fly burial ceremony on the Norgaard farm. Richard and friend, Mike Larson, empty the electrocuted flies into burial hole behind barn.

Now is the Time To Kill Those Flies

Electric traps provide positive insect death

By DUANE FOSSUM

There are many ways to control flies. The most effective method, if it could be done, would be to kill the parent flies early in the spring. Scientists say that one pair of houseflies starting their outdoor activity in April become 600 flies in May. And if all their offspring live to reproduce, their family will number 54,000,000 flies by June!

But of course it is impossible to eliminate all the flies in early spring. Many of them live on to reproduce. Hence, man has been forced to invent and devise numerous methods to combat these pests. One of the most effective is the electric fly trap. A good example of its effectiveness is shown by this picture taken at the C. B. Norgaard's farm near Hatton, North Dakota. Flies on this farm are not building any resistance to chemicals either. They are being electrocuted by the thousands.

These electric fly traps use a specially designed transformer which has a built-in safety device to limit current flow. Hence, they do not cause physical injury or harm to humans or animals. But they are sure death to all insect life. □ □

Calf Dehorning

▶**Question:** *Will a young calf's horns stop growing if they are burned with electricity?*

A. D. S., N.Y.

▶**Answer:** Yes. However, there is no current passed through the horns. The dehorning is accomplished by means of an electrically heated iron, similar to a soldering iron, which has a hollow tip to fit over the horn bud and sear the base of the horn at the hairline.

Electrified Grindstone

▶**Question:** *I have a grindstone that is 13½" in diameter. How can I operate this with an electric motor?*

M. T. H., Ohio

▶**Answer:** Natural sandstone wheels should be operated at a rim speed of about 400 feet per minute. In the case of a 13½" stone it should be operated at about 100 to 110 RPM. Using a 1750 RPM electric motor, you will need a double reduction. This can be done with V belts and pulleys and a jackshaft. Use a 1½" pulley on the motor to drive a 6" pulley on the jackshaft. Use a 1½" pulley on the other end of the jackshaft to drive a 6" pulley on the grindstone. This will give you a speed of approximately 110 RPM.

Watts to Kilowatts

▶**Question:** *Is there any rule or equation that one might use when planning the amount of kilowatt hours used by an appliance with a given number of watts?*

G. B., Ark.

▶**Answer:** To find the kilowatt hour consumption of an electrical appliance, multiply its wattage (you should find this figure on the nameplate) by the hours of operation and divide it by 1,000. This will give you its consumption for any given period. Stated another way, divide the wattage of the appliance by 1,000 and you will have the kilowatt hours it will consume for each hour of operation.

Freezing Fruit

▶**Question:** *Can fruits be successfully frozen without sugar or syrup?*

J.S.O., Calif.

▶**Answer:** Department of Agriculture specialists say that most fruits have better flavor, texture and color when frozen with sugar or syrup than when packed unsweetened.

Fruits that have high quality when frozen unsweetened are currants, cranberries, rhubarb, figs and gooseberries. To pack fruits unsweetened, just wash and stem fully ripe berries; then pack them into containers, leaving head space. Seal them and they're ready for the freezer.

New Publication

"**Electrical Terms—Their Meaning and Use**" published by the Southern Association of Agricultural Engineers and Vocational Agriculture, Barrow Hall, Athens, Georgia. 36 pages, 3 colors, $.75. This useful booklet contains a number of animated illustrations explaining electricity. The discussion includes simple explanations of electrical terms and gives examples showing their usefulness in an everyday understanding of electricity. The booklet also deals with rates and how electrical energy is purchased. Included is a table listing 122 pieces of farm and home electrical equipment, the approximate wattage of each and the approximate kilowatt-hour usage.

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ADVERTISERS

IN THIS ISSUE...

Whenever you need further information about electrical equipment and appliances, you can depend upon the Manufacturers who are advertising in this magazine. We have indexed here for your convenience in alphabetical order the Manufacturers whose advertising is appearing in this May issue.

When writing to these Manufacturers be sure to mention you saw their advertising in ELECTRICITY ON THE FARM Magazine.

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If you are unable to get information about the particular equipment you require from our advertisers as listed above, our Reader Service Department will be glad to help you. As a reader of this magazine you are entitled to this information service free of cost.

Electric Motors Help Process Feed

Managing a 3000-acre farm and 600-head of registered Aberdeen Angus cattle is a real man-sized job for Jim Baber, farm manager of Dr. A. A. Houser's Alpine Farms located near Buchanan, Virginia. Needless to say many pieces of modern, efficient farm equipment are used.

Baber agrees with other successful cattle men—good feed and good breeding make the animal. Consequently, the Alpine herd receives freshly ground feed daily. The ration is prepared on the farm. In the feed room can be found an oat crimper, a dry mixer, a molasses pump, an auger elevator, a molasses mixer

Screw conveyor carries ingredients from dry mixer up to the molasses mixer directly behind Jim Baber.

and a feed grinder all powered by electric motors.

The last piece of equipment installed in the feed room was the molasses mixer which is powered with a 7½ hp motor.

Baber says, "This mixer has operated very satisfactorily. We can now crimp our oats, grind, and mix approximately five tons of top-quality feed per hour. We have found that mixing 200 pounds of molasses with each 1800 pounds of dry feed gives us a palatable mixture." The slick, well proportioned animals are a living testimonial to those remarks. T. W. STUCKEY

In the June-July

ELECTRICITY ON THE FARM *Magazine*

LOOK FOR PRACTICAL ARTICLES ON

How Today's Dairyman Assures the Consumer of the Best Possible Milk

modern electrical equipment plays a big part in the production of top quality milk

Windowless Poultry House

automation through electricity ... in lighting, ventilation, feeding, egg cooling, gathering and litter removal

Motor Application Tips

how a dairy farmer selected and applied 17 different motors for his farm and home chore equipment

Confined Hog Enterprise

mechanized feeding, watering and manure removal allow year-round farrowing and feeding in a confined area

Grain Drying

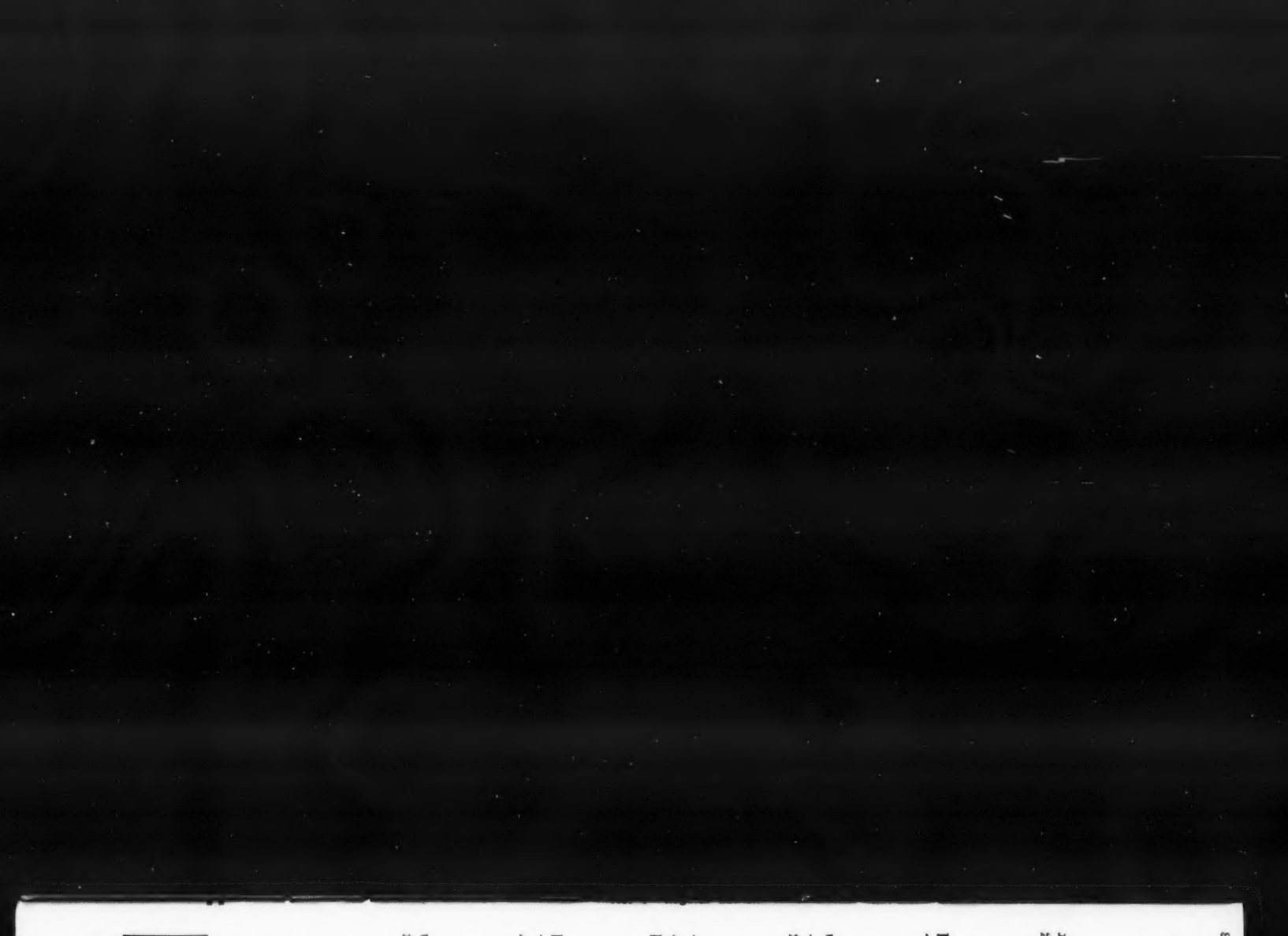
electrical grain drying—a round-up of present principles and practices

Freezing Chicken

the best methods of preparing chicken for storage in the freezer

Also, Articles On ...

Electric Fencers
Lightning Protection
Roadside Egg Vending
Air Conditioning



THE MANAGER SAYS

During recent weeks we have had quite a large number of inquiries for information on electric home heating. We are not surprised. There are about 25 electrically heated homes on our system and the records show that the cost is reasonable. The owners are well satisfied. This proves again that where there is a job to do, electricity can do it best.

In the past few weeks we have signed up five more new homes to be heated electrically and many more are giving it serious consideration. Next winter we expect to have over 50 all electric homes on the system. In the future we expect that a large percentage of all new homes on the system will be heated electrically. In addition many existing homes will convert either when remodeling is done, or the old heating plant is replaced.

We have anticipated this and are including capacity in our long range plans for system improvements. At the present time we have about 25% reserve capacity and plan always to keep ahead so that no one need hesitate to add any equipment which they need or want. Contrast this situation with instances of gas or other fuels where people had to wait until further supply was available before they could install equipment.

During the past 20 years the price of electric power has actually gone down. Contrast this with the price of other fuels which have doubled or tripled in price. There is nothing in the picture to indicate that these trends will not continue for a number of years to come.

* * * * * * * * *

Recently there has been considerable publicity about efforts to introduce a bill in Congress which would abolish REA as such and drastically change the rural electrification loan program of the Government. To my knowledge this bill has not found a sponsor yet. If such a bill should become law it would do much damage to a fine program that was started over 20 years ago; bringing adequate supply of power to all of rural America through the financing of over 1000 rural electric cooperatives.

All of these cooperatives started with practically no equity capital. They have been bootstrap operations doing business in areas which were thought by many utility experts to offer no opportunity for profitable operations. Electric cooperatives have proved this to be generally untrue, and in most instances have made substantial progress. Some have been more fortunate than others. Some will need the present favorable REA loan program for many years to attain solid financial stability. Others may not need it so long. I feel that some will turn to private financing when they feel that their condition justifies such a move. Others will not be able to for a long time. To alter the present REA program drastically would spell ruin for some of the less fortunate electric cooperatives.

The government has fared well with the past and present program. Loans, both interest and principal, have been, and are being repaid on schedule and many millions of dollars have been repaid ahead of schedule. There are very few delinquents.

Why not write to your Congressman and tell him to leave the REA just as it is.

HEAT AND COOL YOUR HOME . . .

ELECTRICALLY

If you are building a new home or remodeling, why not get the facts on electric heat? Visit your Cooperative office for information. Better still, call us and we will send someone out to call on you.

The trend today is toward *Electric Heating* in homes all over the country. There are several electric home heating systems that can be used in the homes today. There is *Cable Heat* that is installed in the ceiling; the *Panel Heat* that is installed in the walls of your home; the *Baseboard Heat* that is installed along your baseboard. And there is the *Heat Pump* that takes the heat from the air and heats your home and the same heat pump gives you air-conditioning in the summer time. There is also the new air-conditioner which provides air-conditioning in the summer and that 'between season' heat that takes the chill away in early mornings and evenings.

With electric heat you save on cleaning and redecorating bills, also on house cleaning time, because with clean *Electric Heat* your walls and furnishings stay cleaner longer. When building a new home, you save the expense of a furnace, chimney, duct work, or even a basement. And when adding a new room to your present home, *Electric Heat* can easily be extended to added rooms without upsetting the rest of the house. *Electricity* is the only type of heat that can give you quick warmth without flame, smoke, or fumes.

Heating your home today with *Electricity* is just another way to *LIVE BETTER --- ELECTRICALLY.*

AND ---
Don't forget your electric Cooperative will pay $35.00 for a complete electric home heating installation, or $75.00 for an electric heat pump installation in your home. This is a year around offer.

FARM MACHINERY CAN BE DANGEROUS IF YOU ARE CARELESS-

DON'T FORGET:

That the worthwhile thing in life is life itself; that one careless movement may mean a lifetime of regret; that nature does not provide you with spare parts; that no compensation check is big enough to relieve an aching heart; that its better for you to be on the payroll instead of the compensation roll; that it is not easy to climb the ladder of success on crutches...

THAT IT TAKES ONLY ONE ACCIDENT TO-

LOSE AN EYE-

AMPUTATE A LIMB-

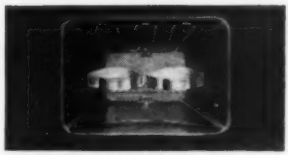
OR SNUFF OUT A LIFE!

Newest electric range...the Shape of Tomorrow!

BAKES BETTER, CLEANS EASIER!

All-new Shape of Tomorrow gives you crisper, cleaner lines than any range you ever saw! Unbeatable performance, too! Perfect baking in any rack position increases baking space. You get automatic surface and oven cooking, a Roast Guard to assure meats done exactly to taste. And it's easy to keep this handsome range clean and sparkling. *Both* oven heating units, *all* surface units plug out for easiest possible clean-up. No other range gives you this style, this baking perfection, this cleaning ease. See your Westinghouse Dealer soon.

Watch TV's top dramatic show, Westinghouse *Studio One in Hollywood*



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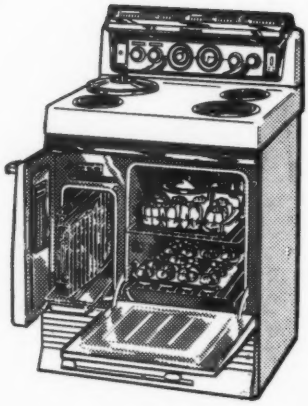

For Our Consumers

Beginning

April 1, 1958 through May 31, 1958

The South-Central Rural Electric Cooperative, Inc. will reimburse the purchaser (being a consumer of South-Central Rural Electric Cooperative, Inc.) of an electric range (or built in models; table top units and built in ovens to be classed as one unit) and being an original installation (replacements not included), with a choice of one Westbend Electric skillet; or one Westbend electric 12 to 24 cup percolator; or one Westbend automatic electric griddle.

In order to receive this bonus the consumer *must* present his or her sales ticket or mail same, to our Lancaster or Circleville office. No sales ticket dated later than May 31, 1958 will be honored. Sales tickets *must* be in our office no later than June 5, 1958. Range will have to be installed and in operation by June 10, 1958 in order to receive bonus.

SOUTH-CENTRAL RURAL ELECTRIC COOPERATIVE, INC.

Lancaster, Ohio — Circleville, Ohio

This magazine is sent to you with our compliments, as an added service, in order to give you the most up-to-date information and to help lighten your work and operate your electrical equipment most economically.